

1967

1967-1969 Southern Illinois University Bulletin Carbondale Campus (Undergraduate Catalog)

Southern Illinois University Carbondale

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One Dollar

Southern Illinois University
Bulletin

1967/1969 Undergraduate Catalog
Carbondale Campus



OBJECTIVES OF SOUTHERN ILLINOIS UNIVERSITY

TO EXALT BEAUTY

*In God,
in nature, and
in art;
Teaching how to love the best
but to keep the human touch;*

TO ADVANCE LEARNING

*In all lines of truth
wherever they may lead,
Showing how to think
rather than what to think,
Assisting the powers
of the mind
In their self-development;*

TO FORWARD IDEAS AND IDEALS

*In our democracy,
Inspiring respect for others
as for ourselves,
Ever promoting freedom
with responsibility;*

TO BECOME A CENTER OF ORDER AND LIGHT

*That knowledge may lead
to understanding
And understanding
to wisdom.*

Southern Illinois University *Bulletin*

*1967/1969 Undergraduate Catalog
Carbondale Campus*



*SOUTHERN ILLINOIS UNIVERSITY BULLETIN / Vol. 9, No. 10,
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This Issue

of the *Southern Illinois University Bulletin* covers in detail questions concerning the undergraduate program and applies to the Carbondale Campus. It supersedes Volume 7, Number 10.

THE FOLLOWING issues of the *Southern Illinois University Bulletin* may be obtained free from Central Publications, Southern Illinois University, Carbondale, Illinois 62901.

Schedule of Classes. Please specify *quarter* (fall, winter, spring, or summer) and *campus* (Carbondale or Edwardsville).

Graduate School Catalog.

Division of Technical and Adult Education.

Student Work and Financial Assistance.

Undergraduate Catalog. The catalog is available for examination in high school guidance offices and libraries throughout Illinois and in some other states. Copies will be furnished free to educational institutions upon request and to new students upon matriculation. A copy of either edition (Carbondale or Edwardsville) of the catalog may be purchased at the University Bookstore for \$1; mail orders should be sent to Central Publications and must include remittance payable to Southern Illinois University.

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University Calendar

<i>FALL, 1967</i>	New Student Week	Sunday–Tuesday, Sept. 17–19
	Quarter Begins	Wednesday, September 20
	Thanksgiving Vacation	Tuesday 10 P.M.– Monday 8 A.M., November 21–27
	Final Examinations	Monday–Saturday, December 11–16
<i>WINTER, 1968</i>	Quarter Begins	Tuesday, January 2
	Final Examinations	Monday–Saturday, March 11–16
<i>SPRING, 1968</i>	Quarter Begins	Monday, March 25
	Memorial Day Holiday	Thursday, May 30
	Final Examinations	Monday–Saturday, June 3–8
	Commencement (Carbondale)	Friday, June 7
	Commencement (Edwardsville)	Saturday, June 8
<i>SUMMER, 1968</i>	Quarter Begins	Monday, June 17 *
	Independence Day Holiday	Thursday, July 4
	Final Examinations	Monday–Friday, August 26–30
	Commencement (Carbondale)	Friday, August 30
	Commencement (Edwardsville)	Saturday, August 31
<i>FALL, 1968</i>	New Student Week	Saturday–Monday, September 21–23
	Quarter Begins	Tuesday, September 24 *
	Thanksgiving Vacation	Tuesday 10 P.M.– Monday 8 A.M., November 26–December 2
	Final Examinations	Wednesday–Tuesday, December 11–17
<i>WINTER, 1969</i>	Quarter Begins	Thursday, January 2 *
	Final Examinations	Thursday–Wednesday, March 13–19
<i>SPRING, 1969</i>	Quarter Begins	Wednesday, March 26 *
	Memorial Day Holiday	Friday, May 30
	Final Examinations	Wednesday–Tuesday, June 4–10
	Commencement (Edwardsville)	Tuesday, June 10
	Commencement (Carbondale)	Wednesday, June 11

* Classes begin with the evening classes after 5:30 P.M. on the Carbondale campus and with the evening classes after 4:30 P.M. on the Edwardsville campus.

Board of Trustees and Officers of Instruction

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1 / The University

SOUTHERN ILLINOIS UNIVERSITY is a multi-purpose and diversified university that, since its establishment in 1869, has sought to meet the educational needs of the times for the people which it serves as a public institution. It is fully accredited by the North Central Association of Colleges and Secondary Schools.

Though the student population has increased manifold from its beginning, the formation of schools, colleges, divisions, and departments within the University enables the institution to concentrate on the special interests of its individual students. The University in total size now ranks twentieth in the nation. It offers facilities and faculty to give general and professional training to students ranging from two-year programs leading to associate degrees to the doctoral degree level.

Because of the growing demand for educational opportunities in the Madison-St. Clair counties area, the University established the Alton Residence Center and the East St. Louis Residence Center in 1957, the former on the campus of what used to be Shurtleff College, the latter in a senior high school building.

During the year 1958-59, communities in Madison and St. Clair counties launched a drive that helped acquire a large central campus site on the outskirts of Edwardsville, Illinois, approximately twenty miles east of St. Louis, Missouri. From what was once farm land is now rising a complex of uniquely designed buildings which constitute the Edwardsville campus.

Thus, though Southern Illinois University is a single university, it has several campuses with the major designations being the Carbondale Campus, with its Vocational-Technical Institute and Little Grassy Lake installation, and the Edwardsville Campus, the latter including the East St. Louis Center, the Alton Center, and the Edwardsville campus itself.

Carbondale Campus

The city of Carbondale (population 20,500) is in southern Illinois, 100 miles southeast of St. Louis, Missouri, in Jackson County, whose western border is the eastern bank of the Mississippi River. The region immediately surrounding Carbondale is noted for its large peach and apple orchards. Within ten miles of the campus there are two state parks and four lakes. The largest of the lakes is Crab Orchard Lake, four miles east of Carbondale. It has a shoreline of 125 miles and is frequented by students for swimming, water skiing, motor boating, sail boating, fishing, picnicking, camping, and hunting. Within the confines of the Carbondale campus itself is the University's own Lake-on-the-Campus with facilities for swimming, boating, fishing, and picnicking. Immediately south of Carbondale begins some of the ruggedest, most picturesque terrain in the state of Illinois.

Sixty miles north of Carbondale is the population center of the United

States, while sixty miles south is the colorful and historic confluence of the Ohio and Mississippi rivers, the two, forming the border of the southern tip of Little Egypt, the fourteen southernmost counties in Illinois.

The campus is undergoing extensive expansion. In addition to approximately seventy large permanent buildings and several hundred small temporary buildings, the following have recently been completed: the arena (seating capacity of 11,000 under a 300-ft. diameter dome), general classroom buildings, communications building, School of Technology complex of buildings, the University Park Residence Halls group (nine four-story residence halls and a seventeen-story residence hall, with complete dining facilities in adjacent dining commons), a physical science building, and a forestry research building.

Southern Acres, in the former administration area of the Illinois Ordnance Plant, contains the educational facilities of the Division of Technical and Adult Education, some apartments for married students, and some residence halls for single students.

The Little Grassy Lake facility consists of nine square miles of land adjacent to Little Grassy Lake and approximately seventy permanent structures. Although the programs conducted at Little Grassy are primarily devoted to instruction and training in recreation and outdoor education, many units of the University utilize its facilities in various ways.

The University Libraries

Morris Library contains approximately 850,000 volumes (including bound government documents, bound periodicals, and books) and 7,000 current periodicals, plus collections of textbooks, newspapers, maps, films, framed art works, and phonograph records. With the exception of volumes in the rare book room, all books are arranged on open shelves available for browsing.

Recognizing the importance of good libraries in a college education, the University has given special attention to both quantity and quality of library development. More than one hundred thousand volumes were added to the library during the past year, placing Southern Illinois University high in growth among the nation's university libraries. The library is open long hours for the convenience of students, and comfortable chairs, individual study tables, and a quiet atmosphere encourages both study and recreational reading. Reference librarians throughout the library are available to assist students in locating materials. A handbook on library use is available free to all students and those desiring further instruction may enroll in a course on library research methods.

Morris Library houses four subject libraries (Education, Humanities, Science, and Social Studies), a Reserve Reading Room, an Audio-Visual Department, and a Textbook Rental Service. Microtext reading equipment is available in each subject library; hi-fidelity phonograph listening equipment is provided in the Humanities Library. A central card catalog of the entire collection is located on the first floor; books may be borrowed for home use from a central circulation desk on the first floor, using an automated charging system. An inexpensive photocopying service is available to students at the circulation desk.

Special libraries are also provided for the University Laboratory School; for the Vocational-Technical Institute, near Carbondale; and for the Outdoor Education Laboratory at Little Grassy Lake.

2 / Admission, Advisement, and Registration

IN ORDER TO attend classes at Southern Illinois University, one must gain official admission to the University and must complete the registration process, which includes specialized testing, advisement, sectioning, and payment of fees.

Admission

Applications for admission to the University are accepted any time during the calendar year but should be initiated in ample time to permit the necessary work of processing to be completed.

Admission of Freshmen

To be eligible for admission, a person must be either a graduate of a recognized high school (graduates of nonrecognized high schools may be admitted by the Director of Admissions by examination), or must have passed the General Educational Development Test. A person seeking admission through the latter procedure will be considered only after his high school class would have graduated.

In-state high school graduates who rank in the upper half of their graduating class are permitted to enter any quarter. Those who rank in the upper two-thirds but who are not in the upper half may enter any quarter other than the fall. Those who rank in the lowest one-third may enter, on academic probation, either the summer or spring quarters provided that they show adequate scores on the University entrance examination. Graduates who rank in the lower half of their graduating class may qualify to enter either the fall or winter quarters by achieving high scores on the University entrance examination.

Out-of-state high school graduates who rank in the upper forty per cent of their graduating class will be permitted to enter any quarter, while those in the lower sixty per cent of their graduating class will be permitted to enter, on academic probation, during the summer quarter provided they show high scores on the University entrance examinations.

Both in-state and out-of-state lower-ranking students who elect to enter during the summer quarter can qualify for fall quarter attendance by carrying a minimum academic load of eight quarter hours and completing them with at least a C average. Otherwise, they may not do so.

Students will be considered for admission after completion of the sixth semester of high school. In addition to the high school record, students must furnish University entrance examination scores prior to their being admitted to the University.

All admissions granted students while in high school are subject to the completion of high school work and maintenance of rank upon which the admission was made.

A student entering the University as a freshman is enrolled in the General Studies Division (except one entering the Vocational-Technical Institute).

Admission of Transfer Students

Students applying as undergraduate transfer students with a 3.00 grade point average are eligible for unconditional admission in any quarter. Students who do not have a 3.00 grade point average and who are in good academic standing at the school of last attendance will be considered for admission for summer, winter, and spring. Students who do not have a 3.00 grade point average and who are not in good academic standing at the school of last attendance will be considered for admission for summer or spring provided there has been an interruption of schooling of at least one quarter's duration and there is tangible evidence to indicate that additional education can be successfully undertaken by the student.

Transfer students suspended for any reason other than academic failure must be cleared by the Student Affairs Division before admission will be granted by the Director of Admissions.

Transfer credit is evaluated for acceptance towards University and General Studies requirements by the Registrar's Office after the admission decision has been made. The evaluation toward satisfaction of specific curriculum requirements is done by the department or agency directing the specific curriculum. General principles governing the acceptance of transfer work are as follows:

1. All transfer work is entered on the student's official record of academic work maintained in the Registrar's Office and continues to be applied to the student's total academic record.

2. Not more than one-fourth of the work accepted for application towards the number needed for graduation may be of *D* quality. Any *D* work not so accepted, however, may be used to satisfy general University, academic unit, or specific program course requirements when applicable.

3. Credit transferred on or after June 1, 1967, from an accredited two-year institution is limited only by the provision that the student must earn the last 96 quarter hours required for the degree at Southern Illinois University or at any other approved four-year institution, except the student must meet the residence requirement for a degree from the University. Conditions governing the acceptance of credit from four-year higher educational institutions also apply to acceptance from two-year institutions.

Further information on the application of transfer work towards satisfying General Studies and graduation requirements may be found on pages 13 and 99 of this catalog.

Transfer students presenting fewer than 64 quarter hours of acceptable work will be enrolled in the General Studies Division as will those with 64 to 96 hours whose areas of concentration are not yet determined. Others will be enrolled in the appropriate upper division academic unit in keeping with their expressed educational objective.

Admission of Foreign Students

Each foreign student must submit, in addition to the regular admission papers, a questionnaire for foreign students showing all previous schooling. The foreign student must also submit an official statement showing sufficient proficiency in English to do successful college work. Such a student should make adequate provision for his financial needs; the University does not assume responsibility for a student who arrives with inadequate financial resources.

Admission of Former Students

A former student of Southern Illinois University not in attendance on a campus at the close of the quarter preceding application for admission must apply to the Admissions Office for re-entrance prior to registration.

A former student who is not in good standing must clear his status before the Admissions Office will prepare his registration permit. It is advisable for such a student to initiate re-entrance clearance early so that all inquiries may be answered and so that the applicant can find time to complete any requirements that may be imposed upon him. (See Scholastic Standards on page 9 of this bulletin for further information.)

Advisement

Academic advisement is administered by the academic units. Each unit employs a selected group of trained advisers devoting part-time duty to this function. They operate under the supervision of a chief adviser who is responsible to the dean of the academic unit.

Students currently in school make appointments for advisement at the start of each advance registration period. Students who are being admitted to the University receive information about advisement and registration as a part of the admission procedure. This includes a listing of specific dates during advance registration periods which are devoted to the advising and registering of new students. New students should not come to the campus and expect to be advised and to register without first having received an appointment to do so.

Physical Examination

Each new student admitted as a full-time freshman or transfer student is required to have a physical examination performed by a private physician recorded on the form provided by the University. This must be accomplished prior to registration in the University. In case of a religious belief which is in conflict with this plan, special arrangements may be made with the director of the University Health Service.

Registration

Students register for a quarter during the preceding quarter. Ordinarily, registration starts during the third week of a quarter and continues throughout the quarter. New students have certain periods set aside for them during the advance registration period for their advisement and registration. A limited period is provided at the start of each quarter for new students to register, but all students, new and continuing, are encouraged to advance register.

Registration for any session of the University is contingent upon being eligible for registration. Thus, a registration, including the payment of tuition and other fees, may be considered invalid if the student is declared to be ineligible to register due to scholastic reasons. The enrollee may also be considered ineligible to register because of financial or disciplinary reasons if this is certified to the Registrar by the dean of the Student Affairs Division.

Detailed information about the dates and procedures for advisement

and registration appears in the Schedule of Classes, available from Central Publications.

Tuition and Other Fees

The fees charged students are established by the Board of Trustees and are subject to change whenever conditions make changes necessary. On June 29, 1967, the Board changed the fees for students taking fewer than 11 hours. The new fee schedule becomes effective with the winter quarter, 1968, (fees assessed during the fall quarter, 1967). In the table below, the shaded area becomes void, and the first two columns become effective. The third column remains in effect for students taking at least 11 hours.

	Not more than 5 hrs.	More than 5, less than 11	More than 11 or more	More than 5 hrs. or less
Tuition Fee—Illinois Resident .	\$14.00	\$28.00	\$42.00	\$21.00
Tuition Fee—Out of State	(30.00)	(115.00)	(172.00)	(86.00)
Student Welfare and Recreation				
Building Trust Fund Fee	5.00	10.00	15.00	0.00
Book Rental Fee	3.00	6.00	8.00	4.00
Student Activity Fee	3.50	7.00	10.50	10.50*
University Center Fee	5.00	5.00	5.00	5.00
<i>Total—Illinois Resident</i>	<i>\$30.50</i>	<i>\$56.00</i>	<i>\$80.50</i>	<i>\$40.50</i>
<i>Total—Out of State Resident ..</i>	<i>(46.50)</i>	<i>(143.00)</i>	<i>(210.50)</i>	<i>(95.00)</i>

* Optional for students taking 8 hours or less until winter, 1968.

In addition to the above fees, a student is subject to certain other charges under the conditions listed below:

1. A late registration fee, which is \$2.00 for the first day and which increases \$1.00 each day to a maximum of \$5.00 when a student registers after the regular registration period has ended.

2. A \$2.00 program change charge whenever a student changes his program from the one for which he originally registered, **unless the change is made for the convenience of the University.**

3. A graduation fee of \$17.00.

Students holding valid state scholarships are exempt from the above fees to the extent provided by the terms of the specific scholarship held. An Illinois State Teacher Education Scholarship, an Illinois Military Scholarship, or an Illinois General Assembly Scholarship exempts the student from the paying of tuition, the student activity fee, and the graduation fee.

The student activity fee includes the fees for limited hospitalization, entertainment, athletics, student publications, and such other privileges as may be provided.

Faculty members and university civil service employees taking courses are not charged tuition and activity fees. However, they pay all other appropriate fees.

Extension course fees are \$6.00 per hour plus a \$1.05 book rental fee per course.

Adult education course fees are computed on the basis of approximately sixty cents per contact hour.

Other charges which a student may incur are those for departmental field trips, library fines, and excess breakage. Also, a student taking a course involving use of materials, as distinct from equipment, will ordinarily pay for such materials.

A student registering for work on an audit basis is assessed fees on the same basis as when registering on a credit basis.

A student is entitled to a free transcript of his university record each time he has added academically to his record through work taken at this University, provided he has fulfilled all his financial obligations to the University. There is a charge of \$1.00 for each additional transcript.

PAYMENT AND REFUNDING OF FEES

Fees are payable quarterly during the academic year. A student who registers in advance receives a fee statement by mail and may pay either by mail or in person at the Bursar's Office in accordance with instructions accompanying the fee statement. A student who does not register in advance must pay fees at the time of registration.

Refunding of fees is possible only if a student has withdrawn from school, officially, within the first ten days of a quarter and only if the application for a refund is received in the Registrar's Office within ten school days following the last regular registration day. This means that for quarters starting on a Monday the withdrawal from school must have been officially made within the first two calendar weeks of the quarter and the refund application received by Monday of the third week. No refunding of fees is made for a withdrawal occurring after the first two weeks.

A student who originally pays full fees and then finds that he must reduce his program to 8 or fewer hours may receive a refund of one-half the tuition and book rental fee, provided the reduction is officially made during the first ten days of the quarter. Refund payment will be delayed in such case until after the fourth week of the quarter.

Academic Load

The normal academic load for a student is 16 hours. The maximum is 18 hours.

A student with a 4.25 grade point average or above for the preceding quarter may be allowed by the head of his academic unit to take as many as 21 hours. In no case may a student carry, or be credited with, more than 21 hours in any quarter.

A student on scholastic probation may not take more than 14 hours without approval of the head of his academic unit. A student employed full-time may not register for more than 8 hours.

Ordinarily, a student must carry 12 or more hours per quarter to be considered a full-time student. However, a number of programs may carry different requirements and a student attending the University under a scholarship, loan, or other type of program requiring full time enrollment, should check to make certain that he is meeting the requirements of his specific program. For example, Public Law 358 (the new GI Bill) requires 14 hours on the undergraduate level for full-time, 10 to 13 is considered three-quarter load, and 7 to 9 hours, half load. A student concerned with Selective Service on the undergraduate level needs to carry 12 hours to be considered full-time. However, for Selective Service purposes, a student must also be making satisfactory progress. Therefore, he needs to accumulate 48 passing hours each year. Because of this, he must consider 12 hours as only a minimum load for full-time purposes with 16 hours per quarter as the average load he must maintain throughout the year. Further information on both Public Law 358 and Selective Service is available in the Registrar's Office.

Unit of Credit

Southern Illinois University operates on the quarter system. Therefore, references to hours of credit mean quarter hours rather than semester hours. One quarter hour of credit is equivalent to two-thirds of a semester hour. One quarter hour of credit represents the work done by a student in a lecture course attended fifty minutes per week for one quarter, and, in the case of laboratory and activity courses, the stated additional time.

Class Standing

An undergraduate student is classified as a freshman, sophomore, junior, or senior, depending upon the number of hours he has successfully completed toward the degree. A freshman is a student who has completed fewer than 48 hours; a sophomore, from 48 through 95; a junior, from 96 through 143; and a senior, 144 or more.

Grading System

Grades are expressed in letters as follows:

	GRADE POINTS PER HOUR
A, Excellent	5
B, Good	4
C, Satisfactory (this is intended to be the average grade)	3
D, Poor, but passing	2
E, Failure	1
W, Authorized withdrawal with no basis for evaluation established. Work may not be completed. Approved grading symbol only on graduate level except for unusual circumstances where an academic unit dean recommends a change in grade from <i>Ab</i> to <i>W</i> for a student.	
Wp, Authorized withdrawal with passing grade.	
WE, Authorized withdrawal with failing grade.	
Inc, Incomplete. Has permission of instructor to be completed.	
Def, Deferred. Used only for graduate courses of an individual, continuing nature such as thesis or research.	
Ab, Unauthorized withdrawal. Same as <i>E</i> for academic retention purposes.	
S, Satisfactory. Used only for noncredit courses.	
U, Unsatisfactory. Used only for noncredit courses.	
Au, Audit. No grade or credit earned.	

A grade given at the end of a course is final and may not be raised by additional work.

All complete grades and the grades of *WE* and *Ab* are included in determining student grade point averages for academic retention purposes.

Authorized course withdrawals made through the program change process do not receive grades when made during the first four weeks of a quarter. Thereafter, authorized withdrawals receive *Wp* for withdrawal with a passing grade, *WE* for withdrawal with a failing grade, or *W* (for

graduate students only) when no basis for evaluation has been established.

Unauthorized course withdrawals which are made through failure of the students to continue in attendance receive a grade of *Ab*. An *Ab* grade for a student may be changed to a *W* in unusual circumstances upon the recommendation of the head of the student's academic unit.

An *Inc* grade may be changed to a completed grade within a time period to be designated by the instructor, not to exceed one year from the close of the quarter in which the course was taken; otherwise it remains as *Inc* and is not included in grade point computation.

A *Def* grade for course work of an individual nature such as research, thesis, or dissertation is changed to a completed grade when the project has been completed.

The grades of *S* and *U* are used to indicate satisfactory or unsatisfactory completion of a noncredit course.

A student registering for a course on an *audit* basis receives no letter grade and no credit. An auditor's registration card must be marked accordingly, and he pays the same fees as though he were registering for credit. He is expected to attend regularly and is to determine from the instructor the amount of work expected of him. If an auditing student does not attend regularly, the instructor may determine that the student should not have the audited course placed on his record card maintained in the Registrar's Office. A student registering for a course for audit or credit may change to a credit status or vice versa through the official program change method during the first four weeks of a quarter. Thereafter the change may not be made.

The official record of a student's academic work is maintained in the Registrar's Office.

Scholastic Standards

A student who fails to maintain a satisfactory grade point average will be placed in categories other than Good Standing and may be required to discontinue attendance at the University for a period of time.

For a transfer student, the following scholastic standards apply to his academic record at this University and to his over-all academic record.

SCHOLASTIC WARNING

A student who is in Good Standing will be placed in Good Standing-Scholastic Warning at the end of a quarter in which he fails to make a 3.00 grade point average provided he has calculated hours and an accumulative grade point average as follows:

1. Fewer than 96 calculated hours and less than a 3.00 grade point average.

2. 96 but fewer than 144 calculated hours and less than a 3.10 grade point average.

3. 144 or more calculated hours and less than 3.15 grade point average. He is returned to Good Standing at the end of a quarter in which he makes a 3.00 grade point average (or better) while on Good Standing-Scholastic Warning.

SCHOLASTIC PROBATION AND SUSPENSION

When a student on Good Standing-Scholastic Warning fails to make a

3.00 grade point average for a quarter, he is placed on Scholastic Probation and may be subject to suspension from the University for scholastic reasons at the end of any quarter in which he fails to earn a 3.00 grade point average while on Scholastic Probation.

To ensure that a student is making progress toward the 3.00 grade point average required for graduation he must maintain a progressively improving accumulative grade point average. At the end of each spring quarter a student who has accumulated the number of calculated hours listed below must also have obtained the corresponding accumulative grade point average:

<i>Quarter hours</i>	<i>Required average</i>
48– 95.5	2.40
96–119.5	2.70
120–143.5	2.80
144–159.5	2.90
160–	2.95

Otherwise he will be suspended from the University for scholastic reasons. He may seek reinstatement after a minimum of two quarters interruption but must furnish tangible evidence that additional education can be successfully undertaken.

Scholastic Honors Day

In recognition of high scholarship, a Scholastic Honors Day convocation is held each spring. A candidate for a bachelor's degree in June or August who has maintained a grade point average of 4.25 or more for all of his work through the winter quarter of his senior year receives special honor. Each junior having a 4.25 grade point average and each sophomore and freshman having a 4.50 grade point average is also honored at the convocation. Except in the case of a graduating senior, a student must be attending full time to be eligible. A transfer student must have earned the average indicated for work at Southern Illinois University only, as well as for the total record. Graduating seniors are also recognized at commencement on the graduation program, and their diplomas designate honors granted on the basis of the accumulated grade point average as follows: Highest Honors (4.90 or higher), High Honors (4.75–4.89), and Honors (4.50–4.74).

Special Programs for Credit

Credit for Military Experience

Students who have served one year or more of active duty and who have received an honorable discharge may receive up to 6 hours of aerospace credit at Carbondale; service of six months to one year may result in three hours of freshman aerospace credit; less than six months of active service does not allow any college credit. Credit so obtained does not satisfy any of the General Studies requirements.

Credit will be accepted for USAF courses within the limitations enforced for extension and correspondence work. No credit is allowed for college-level G.E.D. tests. In evaluating credit possibilities based upon formal service-school training programs, the recommendations of the American Council on Education as set forth in the U.S. Government bulletin, *Guide to the Evaluation of Educational Experiences in the Armed Forces*, are followed.

In order to receive credit for military service a veteran must present a copy of his discharge or separation papers to the Registrar's Office.

Extension and Correspondence

A maximum of one-half of the number of hours required for the bachelor's degree, or 96 hours, may be taken by extension and correspondence courses combined. Of this total, not more than 48 hours may be taken in correspondence courses.

While Southern Illinois University does not maintain a correspondence division, courses taken by correspondence from institutions which are accredited by their appropriate regional accreditation association will be accepted if the grades are of C quality or better.

Plan "A" Curriculum

Plan "A" has been created for the benefit of superior students who are interested in the objectives of general education as well as their own fields of specialization. Plan "A" consists of one 3-hour course per quarter. The courses, entitled Honors Seminar, are numbered as follows: Plan "A" 151-12, 251-12, 351-9, 391-9.

A student may have credit for one course for one quarter only, or he may stay with Plan "A" for all twelve quarters and accumulate a total of 42 hours of credit. If he does not do satisfactory work, he may be asked to withdraw from the plan at the end of a quarter.

It is hoped that these courses will aid the students in integrating and evaluating their other courses. It is to be hoped also that through these courses they will become acquainted with the broad concepts and the great issues that play important parts in our society. Some quarters will also be planned to give the students an intensive study of the entire culture of a century; for examples, the fifth century B.C., or the fourteenth century A.D.

Plan "A" courses may satisfy some of the General Studies requirements. For example, a student taking the complete Plan "A" Curriculum can substitute it for four courses in Area A and four courses in Area B. Partial completion of Plan "A" will reduce the amount of General Studies credit received.

Plan "A" House is open for study purposes for its students all day every day except Saturday and Sunday.

Individual Honors Work

Individual honors work is available for the outstanding student who desires a heavier concentration of research and independent study during the junior and senior years than is provided by the regular curriculum. Department chairmen compile lists of students eligible or, through conferences, encourage qualified students to enter honors programs.

When a student is accepted for honors work, an advisory committee is appointed to direct his program. The committee approves the student's proposals for independent study and specific requirements in completing his course of study. The program may consist of not fewer than 9 nor more than 21 quarter hours in research or independent study towards his concentration. The student takes a comprehensive examination at the end of his junior year and again at the end of his senior year. Grades may be deferred at the end of the first and second quarters but not from one school year to the next.

Proficiency Examinations

The University recognizes the importance of providing adequate encouragement for academically talented students. Thus, such students are permitted to make application to demonstrate the mastery of certain courses through proficiency examinations. Applications are made at the Registrar's Office.

The following general rules govern the proficiency examinations for undergraduate credit.

1. Any student who feels qualified to take a proficiency examination is eligible to do so; students scoring in the top ten percent of ACT are particularly encouraged to avail themselves of this opportunity.

2. Credit not to exceed 48 hours, including credit through the College Entrance Examination Board, Advanced Placement Program, may be earned through proficiency examinations. Credit will be nonresident.

3. Upon passing a proficiency examination in a course with a credit of "passing," a student will be granted regular credit toward graduation or toward any other legitimate objective. His record will show the name of the course, the hours of credit granted, and a notation "credit granted by proficiency examination"; however, this credit will be neutral in the calculation of grade point average. If a student fails a proficiency examination, his record will show nothing, but the report will be appropriately filed.

4. A student may not take a proficiency examination for the same course more than one time. Neither may he take a proficiency examination in a course in which he has previously received a grade.

5. No credit granted by proficiency examinations will be recorded until the student has earned at least 16 hours of credit of C grade or above in residence at Southern Illinois University.

6. A student applying to take a test for advanced standing only should initiate the request at an advisement office. No credit is recorded regardless of grade earned.

Advanced Placement Program

A high school student who is qualified through registration in an advanced placement course in his high school or through other special educational experience may apply for advanced placement and college credit through the Advanced Placement Program of the College Entrance Examination Board, 475 Riverside Drive, New York, New York 10027. To receive credit, a person must earn the grade of 3, 4, or 5. Any interested high school student should write to the University's Admissions Office to learn the current listing of courses for which credit may be earned through this program.

Ordinarily, the maximum credit granted through advanced placement examinations is 16 hours. It is nonresident credit, does not carry a grade, and is not used in computing the student's average grade. Credit granted at another accredited college or university under this plan is transferable to this University up to a maximum of 16 hours. A student may appeal to his academic dean to be granted more than 16 hours.

3 / General Studies

THE GENERAL STUDIES curriculum provides a broad base of pertinent knowledge upon which a specialization can be built. It accepts the premise that a too narrow concentration within a field of study can deprive a person of the broader social and cultural understandings increasingly necessary for successful participation as citizens in modern society.

The General Studies curriculum possesses unique qualities and consciously involves the student during his advancing stages of academic endeavor. The first-level courses are planned sequences which a student takes during his freshman year. Second-level courses are normally completed during the sophomore and junior years, and the third-level courses are designed to complement the student's professional education program during his junior and senior years. The objective is to furnish the student with a carefully prepared mixture of generalized and specialized courses which complement each other in the educational development of the individual.

General Studies Requirements

The General Studies curriculum is divided into five major subject areas. Area A is titled *Man's Physical Environment and Biological Inheritance* and acquaints the student with the sciences; Area B is named *Man's Social Inheritance and Social Responsibilities* and furnishes the student an opportunity for involvement in the body of knowledge commonly referred to as the social sciences or social studies; and Area C is known as *Man's Insights and Appreciations* and provides contact with the humanities. In each of these areas a student must take a total of 22 hours.

There are two additional areas: Area D, entitled *Organization and Communication of Ideas* requiring a total of 18 hours; and, Area E, named *Health and Physical Development*, which provides 6 hours.

Within each of the five areas, courses are structured in a manner so as to offer the student course sequences within the various levels. The student who has selected his area of concentration at the time he takes the General Studies courses is assisted in determining the proper courses to take by consulting the curriculum guides which he may obtain from his academic adviser.

Area A Man's Physical Environment and Biological Inheritance

	HOURS
First-level basic sequence	8
Second-level continuation sequence	8
Third-level advanced courses	6
<i>Total hours</i>	<u>22</u>

The first-level basic sequence may be either 101-8, or Introduction to Physical Science 110-8, Earth Science.

Introductory Biology (201-8) is the second level-continuation sequence.

The third-level advanced courses may be any two of the following 3-hour courses, except not both 330 and 331. 301 (physiology); 302 (psychology); 310 (chemistry); 312, 313, 314, 315 (zoology); 321, 322 (geology); 330, 331 (geography); 303, 340, 345 (botany); 358 (technology); 361 (music); and 363 (philosophy).

Area B Man's Social Inheritance and Social Responsibilities

First-level basic sequence	8
Second-level continuation sequence	8
Third-level advanced courses	6
<i>Total hours</i>	<u>22</u>

The first-level basic sequence may be either 101-8 Survey of Western Tradition, or the anthropology-geography sequence 102-8 Man and His World.

The second-level continuation sequence may be either the sociology-psychology sequence 201-8, Behavior and Society, or the economics-government sequence 211-8 Political Economy.

The third-level advanced courses may be selected from the more than twenty-five courses in Area B numbered above 299.

Area C Man's Insights and Appreciations

First-level basic sequence	9
Second-level continuation	7
Third-level advanced courses	6
<i>Total hours</i>	<u>22</u>

The first-level basic sequence may be either 110-9, or three courses in philosophy, world literature and art, and either music or art (102-3, 103-3, and either 100-3 or 101-3).

The second-level continuation must include one course from this group of courses: 200 (speech), 201 (drama), 203 (theater), 204 (art), 205 (design), or 206 (music) and one course must be taken from these courses: GSC 202 (poetry), 207 (philosophy), 208 (logic), 209 (modern literature), or 210 (fiction).

The third-level advanced courses may be selected from 305 (French), 307 (government), 310, 311, 312, 363a, 381, 382, 383, 386, 387 (philosophy), 317, 318, 345-9, 351a,b, 365 (English), 320, 330, 331, 332 (foreign languages), 340, 341, 342 (art), 348, 349 (printing and photography), 357a,b,c (music). 300c may not be taken separately for General Studies credit.

Area D Organization and Communication of Ideas

Required composition and speech	9
Either a foreign language sequence or a basic mathematics sequence	9
<i>Total hours</i>	<u>18</u>

To assure composition competency, some upper division academic units require a C average in the three composition courses. A student may determine which units have this requirement by referring to Chapter 5 of this bulletin where the requirements of the various units appear.

Area E Health and Physical Development

First-level physical education	3
Second-level health education	3
<i>Total hours</i>	<u>6</u>

The physical education requirement for women may be satisfied by taking three courses within a wide variety of activity-type courses offered. Specifically required of men is GSE 102, Physical Fitness plus 2 additional hours in GSE activity courses.

The second-level health education requirement is satisfied by taking GSE 201 Healthful Living.

Flexibility in Meeting General Studies Requirements

Considerable latitude is permitted the student in meeting General Studies course requirements. The University believes in a strong, well rounded general education program but does not accept the idea that every student must take the same courses or program in meeting the objective. Alternate routes are, therefore, provided within the General Studies framework. These alternatives consist of providing different course sequences in a number of the areas, advanced standing, proficiency examinations, substitution of departmental courses for General Studies courses and waiver of third-level courses. Through these methods, a maximum of 90 hours of General Studies course work can be reduced.

ADVANCED STANDING

It is possible for a student to receive advanced standing consideration in Areas A, B, C, and D. This means that he might by-pass the basic sequences but without receiving credit.

Advanced standing consideration is determined from the student's test scores and high school subjects taken. Two types of score information are provided by ACT: the national college bound scores and Southern Illinois University predictive scores. If a student achieves a high enough percentile rank on both of these scores, he is eligible for advanced standing consideration. The percentile ranks required are adjusted from time to time and are currently set at 70 per cent for English, and 85 per cent for the other sub-test areas.

General Studies advisers explore a student's eligibility for advanced standing consideration when the student registers for the first time. Those areas in which he has had high school experience and in which he has achieved necessary test scores will be considered for advanced standing.

A relatively large number of students do secure advanced standing consideration. They are encouraged to take proficiency examinations in the same areas for credit.

Students who have participated in the Advanced Placement Program of the College Entrance Examination Board should not confuse the program with the University's advanced standing policy.

PROFICIENCY EXAMINATIONS

A second method for reducing the number of General Studies courses to be taken is through the proficiency examination process. By demonstrat-

ing the mastering of a course, a student receives credit without taking the course.

The proficiency examination program applies to other courses, as well as General Studies, and is described in detail on page 12 of this catalog.

COURSE SUBSTITUTION

The General Studies Division permits the substituting of departmental courses for the regularly prescribed General Studies courses on the first level whenever those courses offer the student the same subject matter and to a degree greater than that provided within the General Studies courses. For example, regular courses in physics and chemistry may substitute for the Area A first-level requirement. By taking the departmental courses the student is satisfying both the General Studies requirements and the specialized curriculum requirements.

General Studies advisers are familiar with the courses which have received approval to be substituted for the General Studies courses and will so advise students when they register.

WAIVER OF THIRD-LEVEL COURSES

The General Studies Division permits each curriculum within the University to request a waiver of the third-level 6 hours of advanced courses required in one of the Areas A, B, or C, for the students following that curriculum. The requested waiver needs to be in the area to which it is agreed that the curriculum itself is most closely related and which will, therefore, provide the student with continuing contact with the subject matter covered by the various General Studies courses provided on the third level in that area. Most curricula have specified the area of waiver on the third level, and the curriculum guides which are available through the student's adviser will indicate this waiver situation for the curriculum of his interest.

The Transfer Student and General Studies

A transfer student who expects to graduate from Southern Illinois University must meet the General Studies requirements. It is recognized that in doing so he might experience difficulty in satisfying the specific course requirements as are provided within the General Studies Program. Therefore, he is required to meet all General Studies requirements but he may do so through different course routes.

A transfer student must complete 22 hours in Areas A, B, and C. If he presents 22 acceptable hours in an Area at the time of transfer and the work has been taken in a minimum of three specific fields included within that Area at this University he will be considered as having met the requirements of that Area. If he presents fewer than 22 hours within an area, he will be required to take sufficient hours to total 22 hours. The work will need to be taken in General Studies courses and is to be non-duplicative of work already taken. If he presents no work in one of these Areas, he is required to take the work in that Area on the same basis as does a student who entered Southern Illinois University originally.

In Area A, there is the further provision that the work in three minimum subject areas must include work in both the physical and biological

sciences. A transfer student is granted the same third-level waiver provision as are the native students in the area of his specialization so that he may satisfy one of the Areas A, B, or C by the taking of 16 hours in three specific fields of study rather than by taking 22 hours (see Waiver of Third-level Courses above).

A transfer student is held to the same hour and course distribution requirements as are native students in Areas D and E. These requirements are specified in an earlier section of this catalog.

Additional information concerning admission of a transfer student and the evaluation of transfer credit can be found in the sections of this catalog pertaining to those specific subjects.

4 / Instructional Units

General Studies Division

JOHN W. VOIGT, *Dean*

*Man's Physical Environment and Biological Inheritance;
Man's Social Inheritance and Social Responsibilities; Man's
Insights and Appreciations; Organization and Communication
of Ideas; Health and Physical Development*

All students entering the University as freshmen or as transfer students who have fewer than 64 quarter hours of acceptable transfer credit, except those who enter the Vocational-Technical Institute, are placed in the General Studies Division. While in the General Studies Division, a student experiences contact with several areas of knowledge which can assist him in the thoughtful selection of a professional goal. If the goal is already known, work on the professional area is permitted concurrently with the courses of the General Studies curriculum.

Students make formal application for admission into the appropriate University schools or colleges offering the specialized programs of their choice after they have accumulated 64 or more quarter hours of credit. They must initiate transfer into the appropriate advanced academic unit before enrolling in their junior year (96 quarter hours).

College of Liberal Arts and Sciences

ROGER E. BEYLER, *Dean*

*Anthropology; Botany; Chemistry; English; Foreign Languages;
Geography; Geology; Government; History; Mathematics;
Microbiology; Philosophy; Physics and Astronomy; Physiology;
Psychology; Sociology; Zoology*

The College of Liberal Arts and Sciences serves the students of Southern Illinois University in many capacities. Its instructional staff provides (1) training in basic subject matter courses of General Studies; (2) opportunity for concentration in many of the areas listed on page 35; (3) electives not available in other instructional units of the University; (4) extension and adult education offered through the appropriate divisions; (5) graduate-level instruction for students pursuing higher degrees than the baccalaureate; (6) preprofessional training needed for admission to such specialized schools as law, medicine, and dentistry.

The diversified offerings of the College of Liberal Arts and Sciences are designed to help the student achieve a balanced personality, an awareness of the cultures of the past, an appreciation of his fellow man, and a fundamental understanding of the ever-changing physical, social, and political environment in which he lives. A student in the college may prepare for teaching at the secondary level by including in his studies certain professional courses offered by the College of Education. The Bachelor of Arts or Bachelor of Science degree is granted to a student

who fulfills requirements for graduation from the College of Liberal Arts and Sciences.

College Requirements 1967-68

Students who begin their collegiate training during the 1967-68 school year must satisfy the following requirements to receive a degree from the College of Liberal Arts and Sciences.

1. Competency in English as demonstrated by having completed courses GSD 101, 102, and GSC 103, or their equivalents, with grade average of C or better.

2. Successful completion of one year of a foreign language as demonstrated by any of the following methods: (a) joining a 9-hour 100-level sequence in one language; (b) completion of two years in one language in high school with no grade lower than C and achieving a satisfactory score on a standardized test in that language; or (c) completion of three years in one language in high school with no grade lower than C.

3. Successful completion of requirements in an approved area of concentration.

College Requirements Effective Fall 1968

Students who start their collegiate training fall 1968 or thereafter and who desire a degree from the College of Liberal Arts and Sciences, must satisfy requirements 1 and 3 as listed above and successful completion of two years of a foreign language and one year of mathematics, or two years of mathematics and one year of a foreign language.

The one year foreign language requirement can be met as outlined in 1 above. The two year requirement can be satisfied by (a) passing a 9-hour 200-level sequence in one language; or (b) completion of three years of one language in high school with no grade less than C and achieving a satisfactory score on a standardized test in that language; or (c) completion of four years in one language in high school with no grade below C.

The one year mathematics requirement can be met by (a) passing GSA 108-9; or (b) passing Mathematics 111-10; or (c) completion of three years of high school mathematics with no grade less than C and achieving a satisfactory score on the University's Mathematics Placement Test. The two year requirement can be satisfied by passing Mathematics 150-10.

Areas of Concentration

Each student should check with his academic adviser as to waivers or substitutions permissible in General Studies requirements for his particular area of concentration. Proficiency examinations, for which the student may receive University credit, are offered for many university courses. Proficiency exams are further explained on page 12 of this catalog.

The College of Liberal Arts and Sciences grants baccalaureate degrees in the following areas. Specific requirements for each area of concentration appear in Chapter 5.

Anthropology	East European Studies ²	Government
Art ¹	Economics ¹	Health Science ^{3,4}
Asian Studies ²	English	History
Biological Sciences ^{3,4}	Foreign Languages	Home Economics ¹
Botany	Geography	Inter-American Studies ^{3,4}
Chemistry	Geology	Mathematics

Microbiology	Physiology	Sociology
Music ¹	Psychology	Speech ¹
Philosophy	Religious Studies ²	Theater ¹
Physics	Russian Studies ²	Zoology

¹ These are liberal arts concentrations, not professional concentrations.

² Only secondary concentrations are allowed in these fields.

³ Those who concentrate in these fields need no secondary concentrations.

⁴ No secondary concentrations are allowed in these fields.

Preprofessional Courses

A student planning to take preprofessional courses in any of the following areas should, after completing General Studies, register in the College of Liberal Arts and Sciences. A course of study called preprofessional does not lead to a degree at Southern Illinois University:

Dentistry	(3 or 4 years)	Pharmacy	(1 to 4 years)
Law	(3 or 4 years)	Physical Therapy	(2 or 3 years)
Medical Illustration	(4 years)	Public Health	(3 or 4 years)
Medical Technology	(2 or 3 years)	Theology	(2 to 4 years)
Medicine	(3 or 4 years)	Veterinary Science	(3 or 4 years)
Occupational Therapy	(2 or 3 years)		

College of Education

ELMER J. CLARK, *Dean*

Educational Administration & Supervision; Elementary Education; Guidance & Educational Psychology; Health Education; Higher Education; Instructional Materials; Physical Education for Men; Physical Education for Women; Recreation & Outdoor Education; Secondary Education; Special Education; Student Teaching

The College of Education is committed to giving professional training to teachers of all subjects taught in the public schools and to supervisors, administrators, and specialists. The preparation of teachers for all grades from kindergarten through high school is the special function of the college. In its graduate offerings, however, it broadens its efforts to include professional work for prospective college teachers and several specializations in school administration and supervision. For most undergraduate students preparing to teach in high schools, the subject-matter courses will be taken in the other colleges and schools of the University, and the professional preparation for teaching, including the student teaching, will be taken in the College of Education.

At Southern Illinois University a high school graduate looking for a career in the educational world can prepare for high school, elementary, or kindergarten-primary teaching; for coaching; for positions in school administration; for guidance work; for teaching and supervising special education; and for other community services. He can prepare to teach in special fields such as art, music, home economics, industrial education, business, and agriculture. He can prepare to be a teacher of science, social studies, English, and mathematics. He can get a teaching specialization in specialized fields such as speech correction and general speech. He can dedicate himself, if he wishes, to the teaching of mentally handicapped children, the hard of hearing, or the partially sighted. Physical education

as a field attracts many able men and women, as do such newer fields as recreation and outdoor education. The graduate may look for a career in health education or in school counseling. He may prepare to be a principal or a superintendent by going on with graduate work, or even to be a teacher of teachers in some college or university.

The College of Education grants the Bachelor of Science and the Bachelor of Music Education degrees.

Supervised student teaching is conducted in cooperating public schools. The College of Education requires 12 to 16 hours of student teaching for the Bachelor of Science degree.

Students who wish to become principals or supervisors in the public schools take graduate work in the Department of Educational Administration and Supervision. The department's major emphasis is on graduate work, but it also participates in providing background for elementary and high school teachers.

Teaching Certificates

Students preparing to teach in the public schools of Illinois should be informed that requirements for the Standard Elementary School Certificate are listed on page 49 under Elementary Education; those for the Standard High School Certificate are listed on page 83 under Secondary Education; those for the Standard Special Certificate are listed on page 84.

Students planning to teach on the early childhood and elementary levels register in the College of Education. Most students planning to teach on the high school level also register in this college. However, it is possible for a student to be registered in one of the other colleges or schools and meet the state requirements for a Standard High School Certificate by using as his electives certain prescribed courses in the College of Education. This is also true in the case of those seeking to qualify for a Standard Special Certificate.

Students qualifying for teaching certificates in Illinois should also know that no certificate issued after July 1, 1953, will be renewed for the first time unless the person holding the certificate passes an examination to the satisfaction of the certificating authority upon the provisions and principles of the Constitution of the United States and of the state of Illinois. This requirement may be fulfilled by completing either Government 231 and 300 or GSB 211b, or 300a.

School of Agriculture

WENDELL E. KEEPPER, *Dean*

*Agricultural Industries; Animal Industries; Forestry;
Plant Industries*

The School of Agriculture provides opportunity for the students to prepare themselves professionally through concentrating on study of agricultural and forest production and services and industries closely related thereto. Through teaching of formal courses, conducting research of significance to agriculture and forestry of the area, and providing consultation and service to the people of Southern Illinois in all phases of agriculture, forestry, and related occupations, the School of Agriculture strives to encourage better use of rural resources for the general welfare.

More than eighty-five per cent of Southern Illinois University's graduates in agriculture have entered such major employment areas as agri-

cultural business, advanced professional training for research and teaching, agricultural education, and government services. About ten per cent have gone into farming. Most forestry graduates have taken governmental or industrial positions.

As precollege preparation of high school students for study of agriculture and forestry, it is recommended that the following be included: four units of English, two to four units of mathematics (algebra, geometry, advanced mathematics); two to three units of science (biology, chemistry, physics); and two to three units of social studies. Remaining units might well include agriculture.

For transfer students wishing to pursue a concentration in one of the agricultural or forestry areas, courses taken prior to entering Southern Illinois University should include a distribution in the physical and biological sciences, social sciences, and humanities. In addition a course in speech and appropriate sequences in English composition and college algebra should be included.

The School of Agriculture grants the Bachelor of Science degree in the following areas. Descriptions of the concentrations appear in Chapter 5 of this catalog.

Agricultural Education	Forestry
Agricultural Industries	Forest Resource
Agricultural Economics	Management
Agricultural Business	Forest Recreation and
Agricultural Mechanization	Park Management
Agriculture, General	Plant Industries
Animal Industries	Production
Production	Science
Science	

A student planning to take preprofessional courses in veterinary science or dairy technology should register in the School of Agriculture when eligible.

School of Business

ROBERT S. HANCOCK, *Dean*

Accounting; Economics; Finance; Management; Marketing;
Secretarial & Business Education

The School of Business aims to prepare the student to perform successfully in business and other organizations that function in a changing social, economic, and political environment. The course work in the *Professional Business Core* has a twofold purpose: it assures a balanced preparation in the early study, and it provides a solid foundation for later specialization.

A student in the school may prepare for teaching at the secondary level by including in his studies certain professional courses offered by the College of Education. Individuals desiring to become executive secretaries enroll in the School of Business, take the business core, and pursue an area of concentration in Secretarial and Business Education.

General Studies Requirements for Business Students. Students who intend to enter the School of Business should take GSD 110. This satisfies the requirement in Area D for the School of Business. The prerequisite for GSD 110 is GSD 108-6 or Mathematics 111-10.

Requirements normally taken by students during the sophomore year

include GSB 211a, Economics 214, 215, and Accounting 251-12. These courses are initiated while one is enrolled in General Studies. After completing 64 hours in the General Studies Program, a student may apply for admission to the School of Business.

Professional Business Core. The Professional Business Core, required of all School of Business students, consists of GSB 211a, GSD 110, and 42 hours of credit in the following courses: Accounting 251-12, Economics 214, 215, Finance 320, 371, Management 340, 481, Marketing 225, 325.

School of Communications

C. HORTON TALLEY, *Dean*

*Journalism; Printing & Photography; Radio-Television;
Speech; Speech Pathology & Audiology; Theater*

The School of Communications provides the opportunity for students to specialize in the study of the various mass communications media and to develop skills in the utilization of those media.

The School of Communications is also engaged in research work in the various aspects of mass communications. It provides consulting and other services to area schools, newspapers, radio and television stations.

School of Fine Arts

BURNETT H. SHRYOCK, *Dean*

Art; Music; Design

The School of Fine Arts serves as an instrument of the University for the direction of training and the stimulation of creative and professional work in the fine arts. It also serves students, enrolled in other academic units, who want an experience in the fine arts for either cultural or practical reasons. It offers undergraduate concentrations leading to the Bachelor of Arts or the Bachelor of Music degree.

The School of Fine Arts sponsors a number of special events each year. A Fine Arts Festival, which lasts several weeks, includes lectures by noted artists, musical ensembles, individual performances, dance recitals, dramatic presentations, and art exhibitions. A continuous planning of art exhibitions and an intensive series of public music performances are presented at no cost to students and faculty members. The Department of Music is an institutional member of the National Association of Schools of Music.

University Galleries, a campus wide activity in terms of the exhibitions of student and faculty work as well as traveling exhibitions, is under the jurisdiction of the School of Fine Arts.

School of Home Economics

EILEEN E. QUIGLEY, *Dean*

*Clothing & Textiles; Food & Nutrition; Home & Family;
Home Economics Education*

The objectives of the School of Home Economics are to provide instruction, to stimulate research, to provide service work in home economics for other educational units desiring it, and to give to the people in the area service which will help in improving the understandings and practices in their families and homes.

Students in the School of Home Economics may follow courses of study leading to the Bachelor of Science degree.

School of Technology

JULIAN H. LAUCHNER, *Dean*

Applied Science; Engineering; Engineering Technology;

Industrial Technology; Technical and Industrial Education

The School of Technology provides instruction in broad areas of technology. Through instruction, research, and consultative services, it serves Southern Illinois and has a growing responsibility in broader areas.

The courses of study in the School of Technology are designed to provide instruction and to stimulate research in all areas of technology. These courses of study serve to eliminate the barriers and to bridge the gaps between scientists, engineers, and technologists—between theories and their applications—between the creative and practical aspects, in the basic areas of science, engineering, and industry. Its course offerings provide:

1. Basic subject matter for development of the scientific and technological method and philosophy.
2. Preprofessional and professional training in the field of engineering.
3. Extension and adult education courses offered through the appropriate divisions of the University.
4. Graduate-level instruction for students pursuing higher degrees.

High school students preparing for study in the School of Technology should have four units of English, two and one-half to four units of mathematics (algebra, geometry, trigonometry), two to three units of social studies, and two to three units of science (biology, chemistry, physics); physics is especially recommended.

Aerospace Studies

COL. EDWARD C. MURPHY, *Commander*

The Air Force Reserve Officers Training Corps Detachment at Southern Illinois University is a senior division ROTC unit administered by commissioned officers of the USAF who have been assigned by the Department of the Air Force with the approval of the University. These officers are appointed as members of the University's instructional staff. The senior officer is designated as Professor of Aerospace Studies and Detachment Commander. Airmen are assigned to assist in practical instruction and administration and to assist in the care of federal property. The University Corps of Cadets consists of all students pursuing AF ROTC training. General Military Course cadets retain their civilian status until they become fully qualified members of the Professional Officer Course, at which time they are enlisted in a special obligated Air Force Reserve Status.

The AF ROTC course of study is offered in either the two- or four-year program on the Carbondale campus and the two-year program only on the Edwardsville campus. The four-year program is divided into the General Military Course (GMC), covering the freshman and sophomore years, and the Professional Officer Course (POC), covering the junior and senior years. Cadets enrolled in the four-year program are required to attend a four-week summer training unit between their junior and

senior years. The two-year program commences, after satisfactorily passing mental and physical tests, an evaluation process, and completion of a six-week summer training unit prior to entry in the POC.

An additional facet and incentive of the four-year course is the Financial Assistance Program, a scholarship grant to several outstanding cadets entering the POC, covering tuition, books, fees, laboratory expenses, supplies, and an increased retention pay above that of other POC cadets. The courses are designed to provide the fundamental training, both personal and professional, which will best equip a cadet to become an effective junior Air Force officer possessing a high growth potential and also to develop and stimulate a growing desire on his part to enter the Air Force flight training program. The GMC is designed with two additional objectives in mind: first, to interest the cadet in the possibility of continuing in the advanced AF ROTC and ultimately making the Air Force his career; and second, to provide him with *Space Age* citizenship training of long-range value to the Air Force whether he returns to civil life or becomes a member of the USAF. Emphasis is given throughout both courses, primarily in the POC, however, both in theory and practice, to outlining the leadership and managerial duties and responsibilities of squadron level officers, to improving oral and written expression, and to learning techniques of the problem-solving process.

In addition to the AF ROTC programs offered for academic credit at the Carbondale Campus, the Department of Aerospace Studies indorses or directly sponsors extracurricular activities.

The Arnold Air Society, a national professional fraternity, is open to selected cadets and undergraduate men. Honor Guard, an auxiliary of Arnold Air Society, is a precision drill team and is open to all cadets.

Membership in the Angel Flight, an auxiliary of the Arnold Air Society, is open to selected undergraduate women.

Cadets may also compete for numerous trophies and awards available to members of the Cadet Corps.

The General Military Course for freshmen and sophomores consists of one hour per week of classroom instruction and one hour per week corps training activity throughout each of the two years.

Requirements for entry into the GMC follow: Each applicant must be enrolled as a full time student in the University, be a citizen of the United States or seeking citizenship status, be of sound moral character, have no obviously disqualifying physical limitations, and pass a pre-enrollment aptitude test.

The POC consists of six quarters of prescribed academic work in addition to the four-week summer training unit for four-year program students. It is the same for two-year program students, except that the six-week summer training unit for these individuals precedes entry into the POC, and they do not attend the four-week camp prescribed for four-year program cadets. The object of the POC is to qualify students for appointment as second lieutenants in the United States Air Force Reserve.

Selection of students for enrollment will be made from qualified applicants by the Professor of Aerospace Studies as provided in Public Law 88-647 (ROTC Vitalization Act of 1946) as follows:

1. Conditions of Service. All POC students will be members of the obligated Air Force Reserve and will be placed under contract with the government. The contract will contain the following provisions:

- a. The Student agrees

- (1) Unless sooner released for the convenience of the government, to complete the POC and to attend the summer training unit at the time specified by proper authority.
- (2) To accept an appointment as second lieutenant, United States Air Force Reserve, if and when tendered.
- b. The Department of the Air Force agrees to pay the student a retention fee at a monthly rate as announced by that department. The current rate is \$40 per month for a maximum period of 600 days. For Financial Assistance Program students the rate is \$50 per month.
2. Personal Qualifications
 - a. A student must have completed the GM course or its equivalent in previous service, or the six week field training, if a two-year program student.
 - (1) Students who have had previous training or service may receive credit toward entrance into the POC within the following limits.
 - (a) On the basis of previous honorable service in the Air Force, Army, Navy, Marine Corps, or Coast Guard, a cadet may request a waiver of the GM course, or any portion thereof, as a requirement for entrance into the POC.
 - b. In age, the student must not have reached his twenty-fifth birthday at the time of initial enrollment in the POC.
 - c. The physical standards prescribed for appointment to the United States Air Force Reserve in AFM 160 will apply. Due allowance will be made for physical defects that can be corrected.
 - d. Mental and educational requirements:
 - (1) A satisfactory score for the Air Force Officer Qualification Test will be required.
 - (2) The fact of enrollment in Southern Illinois University and academic *good standing* will be accepted in satisfaction of education requirements.
 - (3) At the time of acceptance, the applicant must have at least two academic years remaining to complete all prerequisites for graduation from the University; or, if he is a graduate student, he must have a like period of time remaining to complete all work for an advanced degree. In addition, an applicant's academic standing must be in phase with his AF ROTC training.
3. In addition to the monetary emoluments listed above POC cadets receive:
 - a. An officer-type uniform—cadets will be furnished a uniform on a commutation basis. The uniform remains in the cadet's possession during his two-year enrollment and becomes his property upon successful completion of the AF ROTC program.
 - b. The pay of the first enlisted grade (\$120 per month) while at advanced summer training unit and travel pay to and from that unit at the rate of 6c per mile.

The POC consists of three hours of instruction per week for a minimum total period of seventy-two weeks.

The program consists of generalized courses designed to develop those attributes of character, personality, and leadership which are essential to

an officer in the USAF, supplemented by practical training in leadership and exercise of command.

Advanced Air Force ROTC summer training units of four weeks' duration will be conducted annually at Air Force installations to be designated by the Department of the Air Force. The six week camps will be similarly conducted.

Students enrolled in the four-year course will be required to complete the summer training program prior to receiving their commission. They will normally attend camp immediately after completing the first year of the POC.

Students enrolled in the AF ROTC courses at Southern Illinois University receives the following credit: Three hours of credit for the GMC (1 hour per quarter) and 18 * hours for the POC (3 hours per quarter).

All credit received for the AF ROTC courses is allowable toward a bachelor's degree.

Air Force ROTC textbooks will be furnished on a loan basis to all AF ROTC students.

Uniforms are furnished by the University for the use of the GMC AF ROTC students.

All cadets are required to wear the uniform on such days and occasions as directed by the Professor of Aerospace Studies.

Air Force ROTC Awards

Awards are presented to outstanding cadets at the close of the school year. Details concerning such awards are published at appropriate times on the cadet bulletin board. The following awards will be presented to recipients during the Honors Day Ceremony, at Southern Illinois University, held in May.

1. The Commander's Award. Awarded by the detachment to cadet commanders appointed during the school year in recognition of leadership ability as demonstrated in command positions in the cadet corps.

2. The Trustees' Award, Senior Student. Awarded to the outstanding cadet in the senior year, based on standing in the University and in AF ROTC, and aptitude for general service.

3. The Trustees' Award, Junior Student. Awarded on the same basis as for senior cadet, except to a junior.

4. The Trustees' Award, Sophomore Student. Awarded on the same basis as for senior cadet, except to a sophomore.

5. The Trustees' Award, Freshman Student. Awarded on the same basis as for senior cadet, except to a freshman.

6. Air Force Association Medal, Outstanding senior cadet. Awarded to the senior cadet making the highest military grades of the year.

7. The Reserve Officers' Association Award, junior student. Awarded to the outstanding junior cadet, based on the University and AF ROTC grades for the current year and aptitude for general service.

8. The Air Force Times Award. Awarded to the senior cadet bringing constructive attention to the cadet corps.

9. Chicago Tribune Award, Junior Student. Awarded at the end of the first and third quarters of each school year to the outstanding junior cadet,

* Except AS-350, which is 2 hours academic credit for a Weather and Navigation course required of cadets participating in the ROTC Flight Instruction Program and is not included in the above total.

based on the highest grade in the particular military course of the current quarter and aptitude for general service.

10. Chicago Tribune Award, Sophomore Student. Awarded on the same basis as junior cadet, except to a sophomore.

11. General Dynamics Award, Sophomore Student. Awarded to the outstanding sophomore student applying and selected for the POC in a category leading to pilot training.

12. American Legion Auxiliary Awards. National security awards, presented to AF ROTC cadets in recognition of continued outstanding service in the interest of the corps.

13. McDonnell Aviation Award. Awarded to the outstanding senior cadet who has been selected for pilot training.

14. Sons of American Revolution. Awarded to that GMC cadet with highest over-all academic standing and military aptitude.

University Extension Services

RAYMOND H. DEY, *Dean*

The University Extension Services is an all-university agency with offices on both the Carbondale and Edwardsville campuses. Its major function is to impart knowledge to persons not in regular attendance at the University. This is done in two ways: (1) The Extension Class Program, and (2) The Educational Conference Program.

Extension classes, which offer college credit and are identical to similar classes offered on the campus, are scheduled in the various communities in the southern half of the state of Illinois, or are offered by radio or television for Southern Illinois residents, where there is a need for them. Classes are also scheduled in foreign countries when there are definite advantages to having them offered there.

The Educational Conference Program is conducted on both campuses of the University and occasionally off campus in nearby cities and towns. Assistance is not only given for local conferences but for state and national conferences. Persons attend these conferences from the state of Illinois, from all parts of the country, and in some instances from all over the world.

The University Extension Services, in its programs, uses professional faculty members, distinguished visiting authorities, library facilities, various teaching aids, and many other resources of the University in carrying out its function.

Policies and Procedures of the Extension Class Program

CLASS MEETINGS

Three-hour Extension classes meet weekly for a period of 12 weeks, each meeting being $2\frac{1}{2}$ hours in length unless otherwise stated. Four-hour Extension classes meet weekly for a period of 16 weeks, each meeting being $2\frac{1}{2}$ hours in length, or weekly for 12 weeks with 4 extra meetings being arranged by the instructor and the group, with the exception that 4-hour graduate classes meet weekly for 12 weeks.

FIRST CLASS MEETING

The date of the first meeting of an Extension class is arbitrarily set by

the extension dean. The instructor and the group, at the first meeting of the class, decide upon which day of the week subsequent meetings are to be held if the instructor has other days available.

TUITION AND FEES

Tuition is \$6.00 per quarter hour of credit plus a \$1.05 textbook rental fee. The textbook rental fee must be paid by all students, including holders of Normal School and Military scholarships, except graduate students who must purchase, or make other arrangements for, their books. (The instructor has the privilege of requiring the purchase of additional books and materials.)

REGISTRATION

Registration for Extension classes will be conducted by the instructor during the first and second meetings of the class. Students are urged to register at the first meeting. Students registering after the second meeting of the class must have unusually good reasons for doing so which must be approved by the dean of University Extension Services. A late registration fee of \$5.00 will also be charged.

All Extension students must have their Social Security numbers with them in order to complete their registration at the first class meeting.

AUDITING

Persons not interested in receiving credit may audit courses, if facilities are available, by receiving permission from the instructor. Auditors pay the same fee as those who register for credit.

TEXTBOOKS

Undergraduate students will be able to obtain rented textbooks at the first meeting of the class. Graduate students may either purchase books at the first meeting of the class or complete a form for ordering them. In this case, the books ordered will be available at the second meeting of the class.

LIBRARY FACILITIES

Each instructor may, if he so desires, take a number of supplemental reading books, perhaps thirty or forty, to his Extension class. These books are readily available to the student as they are kept in the room where the class is conducted. Students are also issued a Library Permit which enables them to use any of the libraries on any of our campuses. There is no charge for these services.

EXTENSION CREDIT APPLICABLE TO THE BACHELOR'S AND MASTER'S DEGREES

Extension credit may be applied to meet graduation requirements or towards a master's degree. University policy provides, however, that not more than one-half of the total credit required for graduation, or 96 hours, may be obtained in off-campus courses. Sixteen hours of Extension credit may be applied toward a master's degree.

COURSE NUMBERING SYSTEM

Any 400 level course may be used for either undergraduate or graduate credit. The 500 level courses are open to graduate students only. Only

students who have graduate standing or more than 96 hours of undergraduate credit, which is at least junior standing, may register in a 400 level course. Other Extension courses are open to students who are high school graduates or over 21 years of age (students who have been forced to drop school because of low grades are not eligible for Extension work unless permission is obtained from the proper campus academic dean). Those starting to work toward the master's degree must come to the Office of the Graduate School before the end of their first course and have an adviser assigned who will help plan the rest of their graduate program.

SCHEDULING EXTENSION CLASSES

Extension courses will be scheduled under the following three conditions: (1) Where it is apparent that there is a need present and adequate enrollments to justify scheduling the class; (2) When it is possible to obtain a faculty member to teach the class; and (3) When adequate laboratory and library facilities are available.

Educational Conference Program

PURPOSE OF THE PROGRAM

Educational conferences are scheduled when off-campus persons are in need of knowledge which may be obtained from our professional faculty members, from outstanding authorities who may be brought to the campus, or which may evolve as a result of panel and other discussion techniques participated in by those mentioned above as well as others.

ORIGIN OF CONFERENCE

The idea of a conference may originate from one or more persons who are members of one of our academic departments or divisions, from one or more persons with similar interests off-campus, from a member of the University Extension Services, or by a combination of these as well as other persons.

A call to the University Extension Services will set in motion the process which results in a specific conference.

CONFERENCE PLANNING

A conference planning group is usually desirable in order to determine if there is a real need for a conference, to better define this need, and to discuss the best personnel and conference techniques to meet this need.

ASSISTANCE PROVIDED BY THE UNIVERSITY EXTENSION SERVICES

In addition to helping determine and assemble a conference planning group, to advise this group of conference techniques which will probably be most successful for this particular conference, and to perform other details incidental to planning, many other activities are often carried on by the University Extension Services. Some of these are as follows:

1. Make arrangements for persons to appear on the conference program, including subject matter specialists as well as representatives from the University Administration.
2. Assemble the conference program and have it printed.
3. Determine a mailing list and send invitations.
4. Arrange for publicity about the conference through a number of media.

5. Reserve auditoriums and other meeting rooms.
6. Arrange for coffee hours, luncheons, and banquets.
7. Requisition microphones, movie and slide projectors, and other paraphernalia of this type.
8. Arrange for registering persons attending the conference.
9. Make any special parking arrangements needed.
10. Make arrangements for lodging for conferees.
11. Arrange tours of campus and other facilities.
12. Arrange social hours for spouses of those attending the conference.
13. Meet trains and airplanes where necessary.
14. Type and distribute copies of speeches presented at the conference.
15. Perform a number of other activities often necessary for a particular conference.

COSTS

A conference registration fee is often assessed to cover some of the conference costs. One some occasions other sources of funds are used to pay for bringing outstanding authorities to the conference and to cover other expenses.

Division of Technical and Adult Education

ERNEST J. SIMON, *Dean*

The Division of Technical and Adult Education has a dual responsibility: to meet the fundamental functions of adult education in its performance in our society; and to serve high school graduates interested in obtaining a college-level course of instruction of a shorter duration than the usual four-year college program.

Vocational-Technical Institute

The Vocational-Technical Institute provides for high school graduates one and two-year college-level terminal courses of study for training technicians. These courses of study are designed to prepare men and women for employment at the semi-professional and technical level in industry, the allied health occupations, and business. (See Division of Technical and Adult Education bulletin.)

Adult Education

The Adult Education course of study consists of noncredit courses in various vocational, technical, and general education fields designed to provide a wide variety of educational opportunities for adults.

Most courses range in length from eight to twelve weeks, two or three hours weekly. Certain special courses are offered for sixteen to twenty-four weeks. These tailor-made courses are varied to meet the interests and needs of the adults served. (See Division of Technical and Adult Education bulletin.)

The adult education courses are taught by regular staff members obtained from every division and school of the University, as well as carefully selected specialists from the ranks of business, industry, and the professions.

Community Development Institute

RICHARD M. THOMAS, *Director*

The Community Development Institute has been established for students seeking training in work with individuals and groups striving to develop a more satisfactory life within the community setting. The institute's purposes also include training of adults concerned with improving their community leadership, and cooperating with academic units of the University and other agencies in research undertakings to investigate community processes and social change. Research findings from these undertakings become invaluable to the communities in their development.

Labor Institute

JOHN M. McDERMOTT, *Director*

The function of the Labor Institute is to promote harmony and cooperation between labor and management by encouraging the training of students and others interested in labor and industrial relations and to provide advice on the technical aspects of labor and industrial relations to labor, to industry, and to the public.

Latin American Institute

A. W. BORK, *Director*

In order to provide a special course of study for the student interested in Latin America, the Latin American Institute offers an undergraduate concentration in inter-American studies leading to the Bachelor of Arts degree in the College of Liberal Arts and Sciences.

Small Business Institute

R. RALPH BEDWELL, *Director*

The primary objective of the Small Business Institute is to serve the continuing educational needs of individuals from business, education, and government in the primary service area of Southern Illinois and beyond through the offering of noncredit management development programs, small business development programs, and programs for academicians.

Inquiries should be directed to the director, Small Business Institute, Southern Illinois University, Carbondale, Illinois 62901.

Transportation Institute

ALEXANDER R. MACMILLAN, *Director*

The Transportation Institute has been established to meet the growing need for specially educated men and women in the transportation and logistics field. Short courses of a continuing educational nature are offered periodically throughout the school year for personnel in or associated with the transportation industry as well as for students and faculty. Courses in transportation and logistics are sponsored in cooperation with other activities of the university in both undergraduate and graduate degree programs.

5/ Areas of Concentration

Fields of Study

Fields of study for students seeking one-year certificates or two-year associate degrees are included in the Division of Technical and Adult Education issue of the *Southern Illinois University Bulletin*. Preprofessional fields are described in Chapter 6 of this catalog.

Fields of study in which Southern Illinois University grants bachelor's degrees are called areas of concentration, and the bulk of this chapter is devoted to their description. They are listed below in the order of their appearance. Also included in this chapter are sections on African studies, nursing, secondary education, and student teaching.

Accounting	General Science ²	Physics
Agricultural Education	Geography	Physiology
Agricultural Industries	Geology	Plant Industries
Agriculture, General	Government	Printing Management
Animal Industries	Health and Physical	Psychology
Anthropology	Education ²	Radio-Television
Applied Science	Health Education	Recreation and
Art	Health Science	Outdoor Education
Asian Studies ¹	History	Religious Studies ¹
Biological Sciences	Home Economics	Russian and East
Botany	Industrial Technology	European Studies ¹
Business Teacher	Instructional	Secretarial Studies
Education	Materials ¹	Small Business
Chemistry	Inter-American	Management
Community	Studies	Social Studies ³
Development ¹	Journalism	Sociology
Design	Language Arts ³	Special Education
Economics	Management	Speech
Elementary Education	Marketing	Speech Pathology
Engineering	Mathematics	and Audiology
Engineering	Microbiology	Technical and
Technology	Music	Industrial
English	Philosophy	Education
Finance	Photography	Theater
Foreign Languages	Physical Education	Zoology
Forestry		

Abbreviations Used in this Chapter

Three-digit numerals are used to identify specific courses. The first numeral of the three indicates the level of that course. A letter following

¹ Secondary concentration only.

² Not described in this catalog.

³ Mentioned under secondary education, but not described in this catalog.

an identification number indicates a *part* of a course (*a* means first part, *b* means second part, etc.). A numeral separated from the identification number by a dash indicates the number of hours required in the course. For example, Forestry 365-10 indicates a third level course of 10 hours in the Department of Forestry, and Forestry 365a,b, would indicate the first two parts of the course.

The five areas of General Studies are referred to as GSA, GSB, GSC, GSD, and GSE. The three-digit numerals following these abbreviations function similarly to those noted above. Numerals 1, 2, or 3 following one of these abbreviations and separated by a dash indicate the level requirement in that area. For example, GSA-3 indicates the third level requirement in General Studies Area A.

Numerals in parentheses in columns of figures pertain to quarter hours which satisfy more than one requirement. They are in parentheses to avoid their being added into the total of the column, which would be a duplication of hours required. For example, under Agricultural Education, below, GSA 101 satisfies part of the General Studies requirements and contributes 8 hours toward the 84 hours required. It also satisfies one of the requirements for concentration in agricultural education but does not contribute to the printed total of 73 hours.

Accounting

Accounting is the means by which the many transactions of business are analyzed, recorded, presented, and interpreted. The ability to analyze, present, and interpret is not acquired easily; it is one that takes thorough and serious study.

The accounting courses are designed to develop those abilities which lead to professional positions in cost accounting, auditing, income tax, financial statement analysis, and general financial accounting. The operation of a business and its financial condition are of interest to its owners, to its employees, to its creditors, to the various governmental bodies, and to the public.

Accounting courses cover four basic areas of study: theory, cost accounting, tax, and auditing. In addition to the four basic areas, special courses are offered in governmental accounting, accounting systems, and Certified Public Accountant problems. Although individuals trained in accounting might work in private industrial firms, public accounting firms, governmental agencies, or in college teaching, the four basic areas in accounting are needed as background. Those individuals desiring to engage in public accounting in Illinois should familiarize themselves with the Illinois laws and regulations covering the certification of public accountants. The regulations are published by the Committee on Accountancy, University of Illinois, Urbana, Illinois 61801.

Bachelor of Science Degree, SCHOOL OF BUSINESS

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.) . .	84
<i>Professional Business Core</i>	42
GSB 211a, GSD 110	(7)
Accounting 251-12	12
Economics 214, 215	6
Finance 320, 371	9
Management 340, 481	8

Marketing 225, 325	7	
<i>Requirements for Concentration in Accounting</i>		39
GSB 102-8, 211b	(12)	
Accounting 331, 341, 351-8, 456	20	
Accounting 432, 442, 453, (choose at least two)	8	
Accounting 355, 415, 458, 459, 461 (Choose one unless three were chosen above.)	3-4	
Economics 315	4	
Finance 372 or 373	4	
<i>Electives</i>		27
<i>Total</i>		192

Secondary Concentration

Requirements for a 24-hour secondary concentration in accounting consist of 251-12, 8 hours of accounting courses numbered 300 or above, and Management 170 or 340.

African Studies

Although a number of courses concerned with Africa are offered, they are insufficient in hours of credit to permit a secondary concentration. The African Studies Committee can give information about the courses available and can also supply advice and assist research on African subjects with its bibliographical and documentary materials. Address the chairman of the committee, Department of Geography, Southern Illinois University, Carbondale, Illinois 62901.

Agricultural Education

In agricultural education, completion of a four-year course of study leads to certification as a teacher of vocational agriculture. Courses in both the School of Agriculture and the College of Education are included. A student may receive the Bachelor of Science degree and take at least part of the additional courses at the graduate level to qualify to teach Vocational Agriculture.

Bachelor of Science Degree, SCHOOL OF AGRICULTURE

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in Agricultural Education</i>	73
GSA 101	(8)
GSB 211a	(4)
GSD 103, 108, 110 or Mathematics 111	(12) + 1
Agricultural Industries: agricultural economics courses	12
Agricultural Industries: agricultural mechanization courses	12
Animal Industries	12
Plant Industries	12
Electives in technical agriculture	24
<i>Professional Education Requirements</i>	34
GSB 201c	(4)
Agricultural Industries 210, 309, 312-12	19
Two of the following: Agricultural Industries 311, Educational administration and Supervision 355, Guidance 422,	

Instructional Materials 417, Secondary Education 407, 440	7
Guidance 305	4
Secondary Education 310	4
<i>Elective</i>	1
<i>Total</i>	192

Agricultural Industries

In agricultural economics, courses are offered in the following fields: farm management, farm credit, agricultural prices, agricultural marketing, agricultural cooperatives, and farm policy. An agricultural business option is available.

Courses are offered in the four fields of farm mechanization; rural electrification, farm power and machinery, farm structures, and soil and water engineering. A special course of study is available to train farm machinery specialists for positions requiring managerial ability for dealer services and sales work.

Bachelor of Science Degree, SCHOOL OF AGRICULTURE

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in Agricultural Industries</i>	81

Three options are available: A. Agricultural Economics, B. Agricultural Business, C. Agricultural Mechanization

	A	B	C
GSA 101-8	(8)	(8)	(8)
GSB 211a	(4)	(4)	(4)
GSB 314	3	3	
GSB 103, 110, Mathematics 111a	(11)	(11)	(11)
Agricultural Industries 114, 350, 354, and others	24	24	0
Agricultural Industries 114, 306, 354, 373, and others	0	0	36
Animal Industries 105 or 231, 315	8	8	8
Plant Industries 103, 309	8	8	8
Electives in agriculture	17	5	8
	60	48	60
Social sciences and business	21		
Social sciences, business, and communications	33		
Business and related courses	21		
<i>Electives</i>			27
<i>Total</i>			192

Agriculture, General

General agriculture, intended for students seeking broad backgrounds in agriculture, is probably the best agricultural plan for students who have not chosen a professional area for emphasis.

Students gain basic preparation for many of the agricultural careers: general farming, agricultural services, agricultural extension, agricultural

communications, agricultural business, agricultural industry, and agricultural production. Students who initially enroll in general agriculture may transfer to other agricultural areas of concentration or they may continue in general agriculture and select courses from various fields.

Bachelor of Science Degree, SCHOOL OF AGRICULTURE

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in General Agriculture</i>	62
GSA 101b, or Chemistry 111a or b (4) + 1	
GSB 211a	(4)
GSD 103, 110 or Math 111b, 111a	(11)
Agricultural Industries 114 or 350 or 354, and others . .	12
Animal Industries 105 or 125 or 231, 315, and others . .	12
Forestry or Agricultural Industries (Mechanization) . .	3-5
Plant Industries 103, 264 or 309, and others	12
Electives in agriculture	20-22
<i>Electives</i>	46
<i>Total</i>	192

Animal Industries

Instruction, research, demonstration, and consultation are provided in the fields of livestock, dairy, and poultry production, veterinary science, and dairy technology. Courses are offered in all phases of animal production, animal nutrition, and livestock management.

The student has opportunity to select courses in other areas of agriculture or related fields such as business, biology, or physical sciences, thus being able to include the agronomic, agricultural economic, and agricultural engineering phases of agriculture or business as related to animal production.

Bachelor of Science Degree, SCHOOL OF AGRICULTURE

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in Animal Industries</i>	69
(For an AGRICULTURAL SCIENCE option, required hours are in the second column.)	
Animal Industries 105, 125, 231 (any two)	8 8
Animal Industries 315, 332, 381	9 9
Animal Industries electives	31 19
Agricultural Industries 354	3 3
Plant Industries 103	4 4
Electives in School of Agriculture	5 5
Chemistry 240 or 305a or 341a (organic)	4 4
Science electives	4 16
<i>Electives</i>	39
<i>Total</i>	192

Anthropology

All the major divisions of anthropology are covered, viz. archaeology, ethnology, social anthropology, linguistics, and physical anthropology. Fac-

ulty members of the department have had field experience in North, South, and Central America, the Caribbean, Europe, Africa, and the Pacific. Faculty specialization and field experience in northern Mexico are especially strong. Emphasis is also given to the anthropology of Southern Illinois with special attention to archaeological studies.

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in Anthropology</i>	73
GSD FL (two years in a language) (9) + 9	
Anthropology 300 or 402, 303, 304, 9 hours from 305 and/or 306, 400, 401 or 413, 404, 405, 408a,b, 409	46
Eighteen hours from at least three of the following: geography, geology, philosophy, psychology, sociology, and zoology	18
<i>Secondary Concentration</i>	24
<i>Electives</i>	11
<i>Total</i>	192

Students are expected to familiarize themselves with the contents of certain basic anthropological publications, whether these fall within the required courses are not. A list of these publications will be provided, and the student is expected to work out a reading course of study under the supervision of his adviser.

SECONDARY CONCENTRATION

A secondary concentration in anthropology consists of 300 or 402, 304, 400, 409, and 10 hours in courses above 300. The student is advised to consult the chairman before selecting his electives.

Applied Science

Science is concerned with discovering and describing the structure and processes of the natural world. Applied science may be thought of as science in the process of becoming technology; it is particularly concerned with the application of new science.

The applied scientist finds that the conventional theoretical formulations often do not completely explain the phenomena with which he must deal, that pure science has tended to pass on into new fields of study so quickly that many important fields are abandoned before they are adequately investigated. He must therefore be prepared to make himself responsible for original and fundamental investigations in the physical and mathematical principles that underlie his own work, while he still holds his place as the pre-eminent intellectual agent of progress in the practical world. The applied science course of study at Southern Illinois University is directed toward the application of science in fields such as materials science, information processing science, applied chemistry, applied mathematics, mechanics, physics, and bionics.

Bachelor of Science Degree, SCHOOL OF TECHNOLOGY

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3.)	76
(Advanced Standing Assumed)	
<i>Requirements for Concentration in Applied Science</i>	125-126

GSB 361	(3)
Applied Science 300, 450, 470	14
Chemistry 111	10
Engineering 222, 260-9, 300-6, 311-6, 331-8, 412, 435 ..	38
Mathematics 150-10, 252-9	(9) + 10
Physics 211-15	15
Technology 100, 101-6	8
Optional Groupings	30-31
(A) <i>Applied Chemistry</i> : Chemistry 235, 309-9, Engineering 420-9, Applied Science electives-7; (B) <i>Applied Mathematics</i> : Applied Science 421, 422, Engineering 422 or Applied Science 418, Mathematics 407, 421, 422, 452-9, 475; (C) <i>Applied Mechanics</i> : Engineering 313-6, 406, 441-3, 445-12, 463-6; (D) <i>Applied Physics</i> : Applied Science 431-9, 432, Engineering 313-6, 401-9, Applied Science or Physics elective-3; (E) <i>Bionics</i> : Engineering 350, 351-6, 352, 435-6, Physiology 209, 300, 430; (F) <i>Information Processing Science</i> : Applied Science 418, 421, 422, Engineering 350-6, 422, 423, 435-9, electives-6; (G) <i>Materials Science</i> : Applied Science 401-12, Engineering 311, 321-9, electives-6.	
Total	201-202

Art

Undergraduate offerings in art provide introductory and specialized experiences. Courses are available for those desiring a concentration in art and for those interested in art as an avocation.

The course of study offered, leading toward the Bachelor of Arts degree in art, requires 111 hours in art with the emphasis on a professional degree.

The University asserts the right to withhold an example of the work of each student in each class. Such works become a part of a permanent collection from which exhibitions may be prepared.

To augment the regular academic course of study and enrich the experiences for the students of art, the University brings to the campus such distinguished New York artists as Herman Cherry, painter; Sidney Geist, sculptor; John Grillo, painter; Edward Millman, painter; Edward Dugmore, painter; Roy Lichenstein, painter; Walter Plate, painter; Ad Reinhardt, painter; and David Slivka, sculptor.

The distinguished weavers Ann Albers and Ronald Cruickshank have conducted lectures and workshops as has the well-known metalsmith, Richard Thomas.

A series of panels and lectures, often combining visiting speakers and members of the regular faculty, is presented each year. This series includes such eminent scholars as art historian, Dr. Richard Ettinghausen, Chief Curator of Near Eastern Art, Freer Gallerys (the Smithsonian Institute), Washington, D.C.; Dr. Harry Bober, professor of art history, New York University; Dr. Hugo Buchtal, Warburg Institute, London, England; Dr. Horst Janson, chairman of the Art History Department, New York University. Dr. Hoyt Sherman conducted demonstrations into

the phenomenon of vision, and the art critics Clement Greenberg and Hilton Kramer have also participated.

Bachelor of Arts Degree, SCHOOL OF FINE ARTS

One concentrating in art should select one of the following fields of specialization by the end of his sophomore year: painting, prints, sculpture, crafts, art history, and art education. He must complete a minimum of 24 hours in art history, unless he specializes in art education.

Studio

<i>General Studies Requirements</i> (See Chapter 3. Waive GSC-3.)	84
<i>Requirements for Concentration in Art</i>	111
Art 100-15, 200-12	27
Art 225-9, electives in art history	24
Art drawing 341-12, 441-6	15
Art electives	13
Art specialization	32
Painting—320-12, 325-15, 401-12, 406-12	
Prints—358-12, 325-15, 410-12, 416-12	
Sculpture—393-12, 325-15, 405-12, 493-12	
<i>General Studies Requirements</i> (See Chapter 3. Waive GSC-3.)	84
<i>Total</i>	195

Studio Crafts

<i>General Studies Requirements</i> (See Chapter 3. Waive GSC-3.)	84
<i>Requirements for Concentration in Art</i>	111
Art 100-15, 200-12	27
Art 225-9, electives in art history	24
Art electives	28
Art specialization	32
Metalsmithing—332-12, 325-15, 430-12, 436-12	
Pottery—302-12, 325-15, 420-12, 426-12	
Weaving—385-12, 325-15, 440-12, 446-12	
<i>Total</i>	195

Art Education

<i>General Studies Requirements</i> (See Chapter 3. Waive GSC-3.)	84
<i>Requirements for Concentration in Art (Education)</i>	94
GSC 340b, 340c	6
Art (studio) 100-15, 200-12, 302, 332, 385	39
Art (history) 225-9	15
Art (education) 300a or 365, 306, 307, 308	13
Art electives	21
<i>Professional Education Requirements</i>	28
Guidance 305	4
Secondary Education 310, 352-12-16	16-20
Art 300, 365 (4) + 4	
Education Electives (Art 308 fulfills a second elective. 3) (3) + 4	
<i>Total</i>	206

Bachelor of Science Degree, COLLEGE OF EDUCATION

Requirements for concentration in art education are the same as those for the Bachelor of Arts program with the exception of the art electives, which are reduced to 6 hours.

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

The course of study is intended to provide students with a good foundation in humanistic studies, art practice, and the history of art for the purpose of further professional training in history, archaeology, education, museology, and other related fields. A secondary concentration in art history includes 225-9 plus 15 hours of art history courses.

Students pursuing a concentration in art history should consult with the chairman of the department or the art history adviser.

Art History

<i>General Studies Requirements</i> (See Chapter 3. Waive GSC-3.)	84
<i>Requirements for Concentration in Art (Art History)</i>	63
GSC 341, 342	6
GSD FL—Two years (9) +	9
Art 100-15 and one other studio course, 3 hours plus	18
Six advanced courses in art history	18
Art 225-9, 482 or 483	12
<i>Secondary Concentration</i>	24
<i>Electives</i>	21
<i>Total</i>	192

Secondary Concentration

One desiring a secondary concentration in art should see the chairman.

Asian Studies

Secondary Concentration

A secondary concentration in Asian studies is offered within the College of Liberal Arts and Sciences. To qualify, one must present a minimum of 30 hours to be chosen from at least three areas from a list of offerings approved by the Committee on Asian Studies. Not more than 12 hours may be taken in any one area. The approved courses cover areas of instruction in agriculture, anthropology, art, economics, foreign language, geography, government, history, and philosophy.

Biological Sciences

The course of study is designed to give the student a broad, yet intensive, education in the biological sciences preparatory for various professions, especially the teaching of biology at the secondary level. This work may be taken in either the College of Liberal Arts and Sciences or the College of Education. The science requirement for this concentration is the same in both colleges; consult Chapter 4 for differing college requirements.

The course of study consists of a combined concentration and secondary concentration of biological courses selected from General Studies

Area A and the Departments of Botany, Microbiology, Physiology, and Zoology. In addition, work in chemistry and mathematics is required.

All students interested in this course of study should consult with the biological sciences adviser in life sciences for a course guide and detailed individual course planning.

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3.)	84
<i>Requirements for Concentration in Biological Sciences</i>	75
GSA 201-8 or 202-8, 312	(11)
GSA 301 and Botany 320 or Physiology 315-15	9 or 15
GSD 108-8 or Mathematics 111-10	(9-10)
Botany 300, 301, 313	9
Botany 315 or Zoology 401	4 or 5
Botany 341 or Zoology 310	3 or 5
Chemistry 111b,c	10-15
Electives from Botany, Microbiology, Physiology, and Zoology	3-12
Microbiology 301, 302	10
Zoology 102, 103, and 402 or 403	14
<i>Electives</i>	33
<i>Total</i>	192

Bachelor of Science Degree, COLLEGE OF EDUCATION

If the degree is to be in the College of Education, the student must satisfy all requirements of that college for the Bachelor of Science degree. The requirements for a concentration are the same in both colleges.

Secondary Concentration

A secondary concentration in biological sciences consists of a minimum of 36 hours and may be taken in either the College of Liberal Arts and Sciences or the College of Education. It must include GSA 201-8 or 202-8, 301, 312, Botany 300, 301, Microbiology 301, and Zoology 102, 103. Attention is called to the fact that Chemistry 111b,c is a prerequisite to some of these biology courses.

Biology electives (and general electives, as desirable) will normally be selected from the following:

GSA 301, 313, 314, 315, 321, 340

Botany 315, 320, 321, 341, 400, 404, 405, 411, 412, 414, 449, 451, 470

Microbiology 302, 403, 425, 441, 451

Physiology 315, 430, 433

Zoology 202, 300, 303, 306, 309, 310, 321, 401, 402, 403, 407, 408, 410, 413, 414

TEACHING CERTIFICATE

Requirements for standard high school teaching certificate (30 hours minimum):

Guidance 305 (prerequisite is GSB 201c)

Secondary Education 310 (prerequisite is Guidance 305), 352-12 to 16

Botany 470-4

Two from the following are required:

- Guidance 422a
- Secondary Education 440
- Education Administration 355
- Instructional Materials 417
- Secondary Education 407

Botany

Anyone considering a concentration in botany should consult with the chairman, Department of Botany.

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in Botany</i>	44-74
GSA 201-8 (4 hours count toward the 48 hours in botany) (8)	
GSD FL-9	(9)
Botany courses selected in consultation with the chairman	44
Chemistry and mathematics: a background of basic courses	0-30
<i>Electives</i>	34-64
<i>Total</i>	192

Secondary Concentration

A secondary concentration consists of a minimum of 24 hours in botany, including GSA 201-8 (which contributes only 4 hours) and excluding Botany 390 and 391.

Business Teacher Education

Bachelor of Science Degree, COLLEGE OF EDUCATION ¹

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.) ..	84
<i>Requirements for Concentration in Business Teacher Education</i> ..	57
GSB 201c; 211-8; GSD 110	(14)
Accounting 251a	4
Economics 214-3	3
Finance 371	4
Management 170 or 320	4
Marketing 225	3
Secretarial and Business Education 201a	3
Preparation to teach in a minimum of four of the following Areas:	36
General (Basic) Business Subjects—Economics 215, Management 340, Marketing 325	
Office Practice and Machines—Requirements for teaching in Area 1, 326, 341, Management 271	
Business Law—Finance 372, 373	

¹ A Bachelor of Science degree is also available within the School of Business for those students who wish to obtain business teaching positions. Students who choose a concentration in the School of Business (Accounting, Economics, Finance, Management, Marketing, Executive Secretarial) may become certified to teach in the public secondary schools by taking selected courses in the School of Business (depending on teaching areas chosen) and Professional Education Courses in the College of Education. Those students who are interested in preparing themselves for executive positions as well as for business teaching positions should consult a School of Business adviser.

Typewriting ² —201b,c-6, 241, 304	
Shorthand and Transcription ² —221-12, 324-8	
Bookkeeping or Record Keeping ² —Accounting 251b,c	
Salesmanship and other Distributive Education	
Subjects—Marketing 325, 329, 337	
<i>Professional Education</i>	34-39
Guidance 305	4
Secondary Education 310	4
Secondary Education 352-12 or 16	12 or 16
Two of the following:	8
Guidance 422a	
Educational Administration 355	
Instructional Materials 417	
Two of the following:	6 or 7
Secretarial and Business Education 403, 404 405, 406, 408, Secondary Education 315	
<i>Electives</i>	12-17
<i>Total</i>	192

Secondary Concentrations

Secondary concentrations are offered in the following areas: (1) secretarial studies and office management, consisting of a minimum of 24 hours in business; (2) business-teacher education, consisting of a minimum of 30 hours in business.

Secondary concentrations are planned for each student individually by the student and his adviser. This procedure is necessary because students' backgrounds and needs vary greatly.

Chemistry

The Department of Chemistry offers three degree programs with a concentration in chemistry. The first is the Bachelor of Arts degree with certification by the American Chemical Society. The degree is recommended for those who wish to become professional chemists. A minimum of 58 credit hours in chemistry is required for this degree. The second is the Bachelor of Arts degree. This degree involves less work in chemistry, with a minimum of 42 hours being required. This program is recommended to students who wish to complete a concentration in chemistry, but who plan on eventually going into other professional areas such as medicine, dentistry, etc.

The third program of study leads to the Bachelor of Science degree in education. This degree program is administered by the College of Education. It is provided for those who wish to become secondary school chemistry teachers.

Candidates for degrees are required to have a 3.00 grade point average in chemistry courses at the start of the second year of the concentration and a 3.25 grade point average in chemistry courses, and/or consent of the chairman, before starting the third and fourth years.

² Students who demonstrate by examination an initial competence in typewriting may be excused from as many as 9 hours of typewriting (201-9). Those students starting with a proficiency in shorthand may be excused from as many as 16 hours of shorthand (221-12, and 324a). Those who have had high school instruction in bookkeeping will start with Accounting 251a.

Bachelor of Arts Degree, A.C.S., COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3.) ..	76
(Advanced Standing Assumed)	
<i>Requirements for Concentration in Chemistry</i>	99-102
GSD 126-9	(9)
Chemistry 111b,c-10, 235, 341-15, 411, 432a, 433, 461-12 plus two of the following: 412, 432b, 451-11, 496, 444, 464, one of which must be picked from the first four on the list	58
Mathematics 111-10, 150-10, 252-9	29
Physics (one year)	12-15
<i>Electives</i> (additional mathematics is recommended)	17
<i>Total</i>	192

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3.) ..	76
(Advanced Standing Assumed)	
<i>Requirements for Concentration in Chemistry</i>	64-86
GSD 126-9 (recommended) or 123-9 or 136-9	(9)
Chemistry 111b,c-10, 235, 341-15 or 305-9, 461-12 or 460-5, 432a plus courses selected from 350, 375, 411, 412, 432, 433, 444, 446, 447, 451-11, 464, 471, 490, 496 to total 42 hours	42
Mathematics 111-10 (remainder determined by prerequisites of chemistry courses; Mathematics 150-10 and 252-9 are recommended for professional chemists)	10-29
Physics (one year)	12-15
<i>Electives</i>	30-52
<i>Total</i>	192

Bachelor of Science in Education, COLLEGE OF EDUCATION

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3.)	76
(Advanced Standing Assumed)	
<i>Requirements for Concentration in Chemistry</i>	48 ¹
Chemistry 111b,c, 235, 341-15 or 305-9, 461-12 or 460, plus courses selected from 350, 375, 411, 412, 432-8, 433, 444, 446, 447, 464, 471, 490, 496	48
For other course requirements see Secondary Education.	

Community Development

Secondary Concentration

A secondary concentration in community development consists of 24 hours, including Sociology 335, 487a,b, plus 13 additional hours approved by the Community Development Institute. A student intending to concentrate in community development should consult the director.

¹ For certification, a concentration of 48 hours requires a secondary concentration of 27 hours. A concentration of 36 hours can be taken, but requires two 27-hour secondary concentrations.

Design

The purpose of these courses is to prepare students for careers of socially useful problem-solving relative to significant needs of contemporary society. The student learns ways to utilize mental and physical resources to develop and control man's living environment. This, therefore, deals with areas of visual communications and environmental planning. Traditional school stratifications are minimized. Boundary lines are continually crossed as the student at the undergraduate level works with a variety of problem situations in cooperation with such disciplines as psychology, microbiology, sociology, education, and others.

Bachelor of Arts Degree, SCHOOL OF FINE ARTS

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in Design</i>	119
GSD 108 or Mathematics 111-10	(9)
Design 100-15, 215-12, 275-12	39
Design 200-6, 300-6, 400-6	18
Design 366-15, 375-15, 390, 465f-15, 465g-15	62
<i>Total</i>	203

Students transferring from other schools, other areas of concentration, or from the General Studies program should arrange a personal interview with the chairman of the Department of Design to develop the appropriate curriculum for fulfilling degree requirements.

Economics

The aim of the course of study in economics is to develop in the student such critical and analytical skills as underlie the ability to understand economic problems and institutions, both in their contemporary and historical setting.

Concentration in economics gives the student a basic understanding of the chief theoretical and institutional branches of the subject as well as the academic background necessary for many positions in industry and labor organizations, for work in the economic branches of government service, for college or university teaching, and for graduate study in economics and business.

Bachelor of Science Degree, SCHOOL OF BUSINESS

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.) . .	84
<i>Professional Business Core</i>	42
GSB 211a, GSD 110	(7)
Accounting 251-12	12
Economics 214, 215	6
Finance 320, 371	9
Management 340, 481	8
Marketing 225, 325	7
<i>Requirements for Concentration in Economics</i>	32-36
Economics 310, 315, 330, 440, 441	20
Any four remaining Economics courses (including GSB 311) except 301, 433, 490	12-16

<i>Electives</i>	30-34
<i>Total</i>	192

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.) ..	84
<i>Requirements for Concentration in Economics</i>	38-42
GSB 211a, GSD 110, GSD FL-9	(16)
Economics 214, 215, 310, 315, 330, 440, 441	26
Any four remaining Economics courses (including GSB 311) except 301, 433, 490	12-16
<i>Secondary Concentration</i>	28
(To be taken in anthropology, foreign languages, geography, history, mathematics, philosophy, psychology or sociology or some other area approved by the chairman of the Department of Economics.)	
<i>Electives</i>	38-42
<i>Total</i>	192

Secondary Concentration

The following courses constitute a 28-hour secondary concentration in economics: GSB 211a, GSD 110, Economics 214, 215, 315, and any three of the following: 310, 330, 429, 440, 441.

Elementary Education

Bachelor of Science Degree, COLLEGE OF EDUCATION

Following are the requirements for the Bachelor of Science degree with concentration in elementary education and meeting the minimum requirements for a Standard Elementary School Certificate on either the early childhood level or the elementary level.

In addition to general university and College of Education requirements a student must (1) meet all requirements pertaining to prerequisites to student teaching and should study the section in this bulletin which lists such requirements; and (2) have at least 24 hours in each of these three fields: language arts, science, social science.

Everyone in elementary education or early childhood education should plan to have September Experience. This Experience consists of serving as a teacher aide in an elementary school in the student's own home town after the public schools open in the fall and before the University opens. Usually there is an opportunity for a full two weeks' experience in helping in the classroom. Students can sign up for September Experience during the spring quarter in the office of the Department of Elementary Education, which then makes the necessary arrangements.

ELEMENTARY

<i>General Studies Requirements</i> (See Chapter 3. Waive GSC-3.)	84
<i>Requirements of Concentration in Elementary Education</i>	94
GSB 211b or Government 300	4
GSB 300b,c	6
Fine Arts electives	9
Language Arts electives	7

Mathematics 310	4
Physical Education for Women 319	4
Area of Specialization ¹	12
<i>Professional Education: (48 hours)</i>	
Educational Administration 355	4
Guidance 305	4
Elementary Education 314, 337, 351b-16	24
Electives ²	16
<i>Other Electives</i>	14
<i>Total</i>	192

EARLY CHILDHOOD

<i>General Studies Requirements (See Chapter 3.)</i>	84
<i>Requirements for Concentration in Elementary Education</i>	99
GSB 211b or Government 300, GSB 300b,c	10
Art 300	4
Language Arts electives	6
Mathematics 310	4
Music 040 (or proficiency), 300b	6
Physical Education for Women 319	4
Secretarial and Business Education 241	1
Technical and Industrial Education 302	4
Area of Specialization ¹	12
<i>Professional Education: (48 hours)</i>	
Educational Administration 355	4
Guidance 305	4
Elementary Education 309 (winter only), 316, 337, 350b-16 ..	27
Electives ²	13
<i>Electives</i>	9
<i>Total</i>	192

Engineering

The engineering course of study is designed to produce graduates who understand the basic sciences and know how to apply them to a broad field of engineering or scientific activity. This area of concentration includes research, development, creative design, and analytical engineering. The graduate may avail himself of the facts of basic science and engineering in the solution of problems, or he may pursue graduate study in many areas of science and technology.

Engineering entrance requirements are (1) character, attitude, and interest suitable to the responsibilities of the engineering profession, (2) intellectual ability and achievement indicated by satisfactory scholastic work prior to entering engineering school, and (3) completion of at least two years in an approved college or university with minimum of 9 hours

¹ Each student must obtain at least 12 hours in addition to all other requirements in one of the following areas: art, foreign languages, health and physical education, instructional materials, language arts, mathematics, music, psychology, recreation and outdoor education, science, social studies.

² Suggested electives include Elementary Education 100 (recommended freshman year), 203, 413, 415, 442; Guidance 422a, 412, 442; Instructional Materials 417; Speech 441, Speech Pathology and Audiology 428; and Special Education courses.

in English and speech, 18 hours in mathematics (analytical geometry, calculus), 15 hours in physics (mechanics, heat, light, sound, electricity, and magnetism), and 10 hours in chemistry (general, inorganic).

Students pursuing the course of study in engineering should have a well-rounded general education in addition to the specific requirements indicated above; thus the committee on admissions suggests that applicants obtain as much exposure to courses in other fields of knowledge as possible. Students who have studied primarily in nonscientific fields are acceptable if they have acquainted themselves well with the contents of pre-engineering courses.

The rest of the college work should be chosen with the object of developing the intellectual talents of the individual, rather than as required preprofessional preparation. The college work should include courses in language and literature, history, and the social studies, or other subjects which may afford the foundation for cultural development. Unless that foundation is laid early, there is the danger that later demands of technical and professional training may lead to its neglect.

Pre-Engineering

The pre-engineering course of study below is designed to provide a basic foundation for the professional engineering courses of study with specific emphasis upon the basic sciences, humanities, and social studies.

<i>Requirements for Pre-Engineering</i>	(52) + 52
General Studies	(43)
Chemistry 111	10
Engineering 260	9
Mathematics 150-10, 252-9	(9) + 10
Physics 211	15
Technology 100, 101-6	8

Entrance requirements and prerequisites to the requirements for the concentration in engineering may total as many as 35 hours in addition to the General Studies requirements. The student should make every effort to satisfy these requirements through advanced standing, proficiency examinations, and waivers. The prerequisites to certain advanced courses may be waived for students who plan to enter engineering.

Bachelor of Science Degree, SCHOOL OF TECHNOLOGY

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3.)	76
(Advanced Standing Assumed)	
<i>Requirements for Concentration in Engineering</i>	124
Requirements for Pre-engineering as listed above	(52) + 52
GSB 361	(3)
Applied Science 300, 470-6	11
Engineering 222, 300-6, 311-9, 313-6, 331-8, 412-3, 435-3, 443-9, 450	51
Electives (engineering design)	10
<i>Total</i>	200

Students pursuing a Bachelor of Science degree with a concentration in engineering will have an opportunity to specialize at the graduate level in such engineering specializations as systems design and theory, information processing and theory, energy conversion, materials, or environment. Students with a concentration in engineering are encouraged

to pursue an integrated program of at least five years duration and completion of 245 hours of undergraduate and graduate credit culminating in a master's degree.

Engineering Technology

Engineering Technology is a technical area of study designed to prepare students who can apply engineering and technical principles and procedures to a variety of engineering activities. A concentration of courses in engineering technology may fulfill the educational requirements for professional work in many fields of technology. Students may concentrate their work in a number of areas such as architectural, chemical, civil, electrical, industrial, and mechanical.

Bachelor of Science Degree, SCHOOL OF TECHNOLOGY

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in Engineering Technology</i>	113
GSA 358	(6)
GSB 361	3
Applied Science 307	5
Engineering 222, 300	6
Engineering Technology 260-9, 304-9, 311-6, 318-6	30
Mathematics 111, 150	(9) + 11
Psychology 320	4
Technology 100, 101-9, 300c	14
Optional Groupings	40
<i>Aeronautical: Engineering Technology 322-6, 338-12, 342-9, electives-13</i>	
<i>Architectural: Engineering 305-12, 344a, Engineering Technology 301, 310, 314, 363, Industrial Technology 304-9, electives-3</i>	
<i>Chemical: Chemistry 230, Engineering 300b, Engineering Technology 337c, 342-6, 349-9, Engineering Technology or Chemistry electives-15</i>	
<i>Civil: Engineering Technology 310-6, 344a, 363-8, 364-6, 426-3, Engineering 344, electives-11</i>	
<i>Electrical: Engineering Technology 303-9, 332-6, 336-6, 338, 437-9, Engineering Technology electrical electives-6</i>	
<i>Hydraulics: Engineering Technology 314-6, 318c, 363-8, 364, 426, technical electives-17</i>	
<i>Industrial: Engineering Technology 325-9, 351-9, Industrial Technology 300-4, 314-9, 318c, 341b,c-6</i>	
<i>Mechanical: Engineering Technology 301-6, 308-9, 320-6, 322, 332, 337, 340, Engineering 300b, technical elective-3</i>	
<i>Mineral: Engineering Technology 318c, 332-9, 425, 430, 465-8, Engineering 459, technical electives-8.</i>	
<i>Total</i>	197

English

The student who wishes to declare English as a concentration should consult the department's director of undergraduate studies as soon as he

knows he will concentrate in English. Transfer students from General Studies and other units of Southern Illinois University should bring a Request for Transfer form. Transfers from colleges other than Southern Illinois University should bring their evaluated transcript of grades. Thereafter, all students must have their advance registration forms signed by a departmental adviser. Deviations from approved programs must have prior approval. Membership in the English Club is expected.

Foreign language requirement for all concentrations in English: two years on the college level (or equivalent).

*Bachelor of Science Degree, COLLEGE OF EDUCATION OR
Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES
Option 1 (primarily for teacher-training candidates)*

<i>General Studies Requirements</i> (See Chapter 3. Waive GSC-3.)	84
<i>Requirements for Concentration in English</i>	43
GSC 201, 202, 210 (prerequisites for a concentration) . (7) + 2	
GSD FL (9)	
English 300-6, 302-12, 309a,b or 309a,c, 390, 485	29
Three 400-level genre-period courses	12
<i>Foreign Language</i> (200 or 300 level)	9
<i>Education Requirements</i> (for certification)	31
Guidance 305 (GSB 201c is prerequisite), Secondary Education 310, 352, two electives	
<i>Electives</i>	25
<i>Total</i>	192

*Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES
Option 2 (primarily for nonteacher-training candidates)*

<i>General Studies Requirements</i> (See Chapter 3. Waive GSC-3.)	84
<i>Requirements for Concentration in English</i>	48
GSC 201, 202, 210 (prerequisites for a concentration) . (7) + 2	
GSD FL (9)	
English 302-12, 309a,b or 309a,c, 390, 495a or 495b	27
Three 400-level genre-period courses	12
English 400-level electives to complete 46 hours	7
<i>Foreign Language</i> (200 or 300 level)	9
<i>Electives</i>	51
<i>Total</i>	192

Option 3 (primarily for prospective graduate students)

<i>General Studies Requirements</i> (See Chapter 3. Waive GSC-3.)	84
<i>Requirements for Concentration in English</i>	52
GSC 201, 202, and 210 (two are prerequisites for a concentration) (7) + 2	
GSD FL (9)	
One course in each of the following areas: medieval, Shake- speare, Renaissance or 17th century, 18th century, 19th cen- tury, 20th century, early American, and American since 1965	32
English 495a or b	4
English language course	4
English 400-level electives to complete 50 hours	10

<i>Foreign Language</i> (200 or 300 level)	9
<i>Electives</i>	47
<i>Total</i>	192

Option 4

Students may petition to undertake a program which does not match printed requirements. Interested students should discuss this possibility with the departmental director of undergraduate studies.

Option 5

Any of the options outlined above may be modified by entry into the departmental honors program. Eligible students will be invited to enter. Requirements for honors students remain as above except that three pro-seminars substitute for three senior genre-period courses.

Recommended Electives Especially for Option 1.

Journalism 103; 201; 421; 422 or 449	12-13
Theater 402a; 409; GSC 203	11
Speech 202 or 205; 323, 423 or 424; 406 (GSD 103 and GSC 200 are prerequisites)	15

Secondary Concentration

A secondary concentration is 27 hours, prescribed as follows: from GSC 200-level English courses, 6 hours; English 300a,b; 302b, and 302a or c; 309a; 390. Deviations must have departmental approval.

Finance

The financial implications of decisions in both business and government are daily becoming more complex. Within the firm, financial considerations permeate the central decisions of research, engineering, production and marketing. Within governmental activities, sophisticated financial techniques are becoming increasingly important. The financial executive thus takes a key role in the successful management of both business and governmental operations.

The finance curriculum offers three areas of specialization to meet the varied interests of students: (1) financial management, (2) financial institutions, and (3) general finance. The financial management program provides the background for a career in the financial operations of business firms and public institutions. The financial institutions specialization is designed for those interested in the operations of financial intermediaries and financial markets. General finance is a broad program which surveys the entire finance area.

Bachelor of Science Degree, SCHOOL OF BUSINESS

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Professional Business Core</i>	42
GSB 211a and GSD 110	(7)
Accounting 251-12	12
Economics 214, 215	6
Finance 320, 371	9

Management 340, 481	8
Marketing 225, 325	7
<i>Requirements for Concentration in Finance</i>	36
GSB 102-8, 211, 211a	(12)
Accounting 415	4
Finance 323, 325, 327, 421	16
<i>One of the following specializations</i>	16
Financial Management	(16)
Finance 324, 422, 475	12
Management 479	4
Financial Institutions	(16)
Finance 324, 326, 328	12
Management 479	4
General Finance	(16)
Student must choose 16 hours in Finance	
<i>Electives</i>	30
<i>Total</i>	192

Foreign Languages

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSC-3.)	84
<i>Requirements for Concentration in Foreign Languages</i>	42
A minimum of 42 hours in one language in courses numbered above 200	
<i>Secondary Concentration</i>	24
<i>Electives</i>	42
<i>Total</i>	192

Bachelor of Science Degree, COLLEGE OF EDUCATION

<i>Requirements for Concentration in Foreign Languages</i>	36
A minimum of 36 hours in one language in courses numbered above 200.	

Secondary Concentration

A secondary concentration consists of 24 hours in one language, in courses numbered above 200.

Forestry

Forestry provides instruction, research, and public service in the disciplines of forest recreation and park management, forest production, and wood utilization. The department's four-year undergraduate course of study leads to a Bachelor of Science degree offering fundamental training to students planning forestry as a professional career.

During the forestry student's freshman and sophomore years at Southern Illinois University his studies are devoted primarily to basic sciences, such as mathematics, chemistry, botany, physics, and zoology; and other cultural-foundational courses, such as English, history, and economics. Most of the professional forestry courses are offered in the junior

and senior years. One spring quarter of practical field courses is required. During this period students live in the field and pay living expenses involved. By completing his field experience in the spring, the student is free during all school-year summer quarters to be employed by Federal or other forestry agencies or to accelerate in his academic work.

Available to the Department of Forestry for teaching and research are the following: The Crab Orchard Wildlife Refuge; the Shawnee National Forest; the Union County Tree Nursery and Forest; and the Kaskaskia Experimental Forest comprising several hundred thousand acres of forest land, all in the vicinity of the University. Also available for wood utilization teaching and research is a modern wood products plant located at the Vocational-Technical Institute, east of Carbondale. The Southern Illinois University Experimental Forest and Giant City State Park provide additional facilities for teaching and research, especially during the Spring Camp.

In addition, thirty-four staff members of the U.S. Forest Service's Carbondale Forest Research Center are affiliated with the Department of Forestry and help to enrich the University's forestry program.

Bachelor of Science Degree, SCHOOL OF AGRICULTURE

General Studies Requirements (See Chapter 3. Waive GSA-3.) 84

Requirements for Concentration in Forestry (For Forest Resource Management Option see A; for Forest Recreation and Park Management Option see B) 105-106

	A	B
GSA 101-8 or Chemistry 111a or b	(8) + 1	(8) + 1
GSA 330, 340	(6)	(6)
GSB 102	(8)	(8)
GSB 211a	(8)	(8)
GSD 103, 110	(3) + 3	(3) + 3
Botany 320, 457	9	0
Forestry 104, 221, 306, 320, 330, 333, 340, 350b, 363-9, 365-7, 369, 375, 465, 466, 470-8, 471	66	0
Forestry 104, 221, 306, 330, 340, 350-6, 363-9, 365a,b, 369, 375, 410, 450, 451-7, 465, 470-8, 471	0	72
Geology 220	5	5
Mathematics 111-10, 150-5	(9) + 1	(9) + 6
Plant Industries 301	4	4
Technology 101a, Engineering Technology 363a	7	7
Recreation and Outdoor Education 450	0	4
Zoology 306, 463	8	4
<i>Electives</i>		19-20
<i>Total</i>		209

Geography

In the field of geography, the student may work toward either a Bachelor of Science degree or a Bachelor of Arts degree depending upon his objective:

1. Bachelor of Science—for preparation to teach geography in the elementary or secondary school, or (with further preparation) in the junior college; or as a part of preparation to teach either social science or physical science in the elementary or secondary schools.

2. Bachelor of Arts—for a thorough knowledge of geography, in preparation for civil service appointment as a geographer, or for demands of private organizations requiring the services of geographers, meteorologists, cartographers, or planners.

Today a large number of geography students take professional training beyond the bachelor's degree. Schools, colleges, and universities and government and business establishments, as well, are calling for persons with graduate training in geography.

Geography 300, 302, 304, 306, and 400 make up a three-stage core for training in geography. Geography 300 gives a general survey of the viewpoint of geography. The second stage consists of 302, 304, and 306. Each of these courses gives the "elements" of understanding of a particular aspect of geography that all geographers must know. The third stage is 400. In it the various elements of physical, economic, and cultural geography are tied together, and the methods used by geographers in working with the complex of man-land associations in a particular area are shown. Geography 310 introduces the student to basic techniques used by geographers: maps and quantitative methods. Geography 490 offers the student an opportunity to work intimately with one of the staff members.

One concentrating in geography should complete the core courses before taking other geography courses. After completing the core, the student may choose any other geography courses in assembling the hours required for a concentration. However, his course of study should be approved by the departmental adviser.

In physical, economic, and cultural geography there are two advanced sequences each. This is to enable the student wishing to specialize in one of these systematic fields to gain some degree of concentration. Thus, a student interested in one of these specific fields—say, physical geography—may take both sequences in advanced physical geography. A student not interested in such specialization will make his choices from the full range of systematic and regional sequences.

A broad background in other fields is of great importance to a geographer. Thus, it is recommended that geography students hold their hours of geography to the minimum number required and use their elective hours to take work in other areas. Students interested in physical geography should consider work in geology, botany, zoology, plant industries, forestry, and physics. Students interested in economic geography can profit from work in economics, agricultural industries, marketing, and transportation. Students interested in regional development and urban studies have the opportunity to concentrate in economic geography and in cognate fields such as government, community development, and sociology. Students specializing in cultural geography will find courses in sociology, anthropology, community development, history, and government particularly useful. Students interested in the geography of a particular area of the world are encouraged to take courses on the area in other disciplines. Courses of study of the Latin American Institute and the committees on Asian, Russian, and central European studies are particularly noted.

Quantitative methods have become an essential tool used by geogra-

phers. Thus, those with a concentration in geography are strongly urged to take work in statistics. Mathematics 220 or Economics 307 provide an introduction, while students interested in more complete preparation may take Mathematics 410a,b, and c.

Students working for a secondary concentration in geography or taking the Social Studies Field concentration in education must take Geography 300 and two of the following courses: 302, 304, and 306. Consultation with the departmental adviser is encouraged.

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in Geography</i>	42
GSD FL	(12)
Geography 300, 302, 304, 306, 310a, 400, 490-4	27
Geography electives to complete 42 hours	15
<i>Electives</i>	66
<i>Total</i>	192

Bachelor of Science Degree, COLLEGE OF EDUCATION

<i>Requirements for Concentration in Geography</i>	48
GSD FL ¹	(9)
Geography 300, 302, 304, 306, 400, 310a, 490-4	27
Geography electives to complete 48 hours (Only 42 hours are required if two 24-hour concentrations are presented; only 36 hours are required if one other 48-hour concentration is presented.) ²	21

Secondary Concentration

Secondary Concentrations should include the core courses, for together these courses offer the strongest basic preparation in geography.

Geology

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3.)	84
<i>Requirements for Concentration in Geology</i>	63-64
GSD FL	(9)
Chemistry 111-15	(8) + 7
Geology 220, 221, 302, 310, 425a, 431-8, 450a	40
Geology 311, 312, 315, 425b, 425c (any 3)	12
Mathematics 150a	(5)
Physics 206a, 207a, or 211a	4-5
<i>Secondary Concentration</i>	24
<i>Electives</i>	20-21
<i>Total</i>	192

A summer field course in geology is required and should be taken between the junior and senior years. Additional work in chemistry, mathematics, physics, biology, or zoology may be necessary for specialities.

¹ Substitution with written consent of department.

² A background in statistical analysis is recommended.

Preparations for a professional career usually require graduate study.

Secondary Concentration

A secondary concentration consists of 24 hours, determined by consultation with the geology adviser.

Government

A concentration in government is recommended for persons planning to teach civics or government courses, and for those planning to qualify for the study of law or for the public service.

Government students should take as much work as possible in other social sciences, with at least one secondary concentration in a related field. Students planning to take work in government beyond the master's degree should acquire a reading knowledge of both French and German.

It is recommended that government students meet the second-level requirement in GSB by taking 201-8. Such students should then begin their work in government with Government 231 and 232, which are basic courses and prerequisites for many advanced courses. They may, however, take GSB 211-8; in this case they are not permitted to take Government 231 but may take 232.

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

General Studies Requirements (See Chapter 3. Waive GSB-3.)	84
Requirements for Concentration in Government	42
GSD FL-9	(9)
Government 231 (or GSB 211b), 232 highly recommended . .	10
Government electives to total at least 42 hours, preferably according to one of three recommended sequences: 305, 306 . .	32
379, 380, 462, 471, 472, 495-8, GSB 303, 390, 392	(44)
Specialization in International Affairs: 371, 450-12, 453, 456, 457-8, 458-12, 471, 472, 475-8, 480, GSB 303, 345, 385, 390, 392	(55)
Specialization in Public Administration: 305, 315, 340, 360, 410, 420, 432, 434, 435, 436, 438, 440, 461, 462, 463, 464, 466, 467, 469, 470, 495-8	(77)
Electives	66
Total	192

Bachelor of Science Degree, COLLEGE OF EDUCATION

A concentration in government includes 48 hours. The following courses are recommended: Government 231, 232, 243, 305, 315, 330, 360, 371, 379, 380, 420, 466, 467, 472, 495-8, GSB 211b, 385, 390.

Health Education

Bachelor of Science Degree, COLLEGE OF EDUCATION

General Studies Requirements (See Chapter 3. Waive GSA-3.) . .	84
Requirements for Concentration in Health Education (48 hour Concentration, with One Secondary Concentration)	57
Health Education: 300, 301, 305, 312, 325, 334s, 400, 405, 471, 491 and 11 hours of electives	48

Microbiology 301 and GSA 301 9
 In addition, the student is urged to secure a total of 35 hours of natural science or, if preferred, to secure a secondary concentration in biology consisting of GSA 201-8, 301; Botany 300, 301, 313, 449; Zoology 102, 103, and Microbiology 301.

<i>Secondary Concentration and Electives</i>	51
<i>Total</i>	192

A course of study leading to certification is available to the health education student in elementary or secondary teaching specialties.

Secondary Concentrations

Required for health education: 205, 300, 311 or 312, 313s or 334s, 350 or 460, and 471. Additional courses may be taken in safety education, school health, community health, and home nursing.

Requirements for safety education: 302s, 313s, 323s, 334s, 443s, 475s, and Instructional Materials 417 or 445. Additional courses may be elected from the following: 415s, 480s, 481s, Guidance 305, Psychology 302, 305, 320, and Technical and Industrial Education 465-8.

Health Science

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3.)	84
<i>Requirements for Concentration in Health Science</i>	72
GSA 102-8, 201-8	(16)
GSB 102-8, 201-8	(16)
GSD 108-6, 110, FL-9	(9) + 9
GSE 201	(3)
Chemistry 111b,c	10
Government 231, 360	10
Health Education 300, 325, 355, 356, or 490	15
Microbiology 301, 403	10
Psychology 320, 323	8
Zoology 102, 407	10
<i>Electives</i>	36
<i>Total</i>	192

Recommended electives for specialization in sanitation: Botany 404, Health Education 488, Mathematics 111-10 (Alternatives to above GSD requirements), Physics 206-9, Zoology 306, 310, 316, and 406.

Recommended electives for specialization in public health laboratory: Botany 405, Chemistry 230, Microbiology 425, 441, and 451, Physiology 315, Zoology 306, 321, and 406.

History

Students who intend to concentrate in history should consult with a member of the history faculty at the time of registration.

Forty-eight hours are required in history with approximately the same number of 400-level as of 300-level hours. Care should also be taken to distribute the work in the various fields of history. One year of acceptable work in a foreign language is required.

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3.)	90
<i>Requirements for Concentration in History</i>	34
GSB 101-8, 300-9 (15 hours count toward the total of 48 hours in history), GSD FL	(23) + 3
History 452	3
History electives to complete 48 hours	28
<i>Electives</i>	68
<i>Total</i>	192

Secondary Concentration

Thirty hours are required for a secondary concentration in history, and must include GSB 101b,c, 300. Students in the College of Education should take 12 hours each in the foreign and American fields, plus 6 elective hours of history irrespective of field. The exception to the 30 hour secondary concentration is the field course in Social Science, the members of which need not take more than 24 hours of history. It is desirable that a reasonable proportion of the secondary concentration course work should be taken in 400-level courses.

Home Economics

The School of Home Economics grants the Bachelor of Science degree in home economics. No secondary concentration is required. The following specializations are offered by the school and the departments indicated:

<i>Specialization</i>	<i>Department</i>
Apparel Design	Clothing and Textiles
Clothing and Textiles	Clothing and Textiles
Merchandising	
Dietetics	Food and Nutrition
Food and Nutrition Science	Food and Nutrition
Foods in Business	Food and Nutrition
General Home Economics	Home and Family
Extension	Home Economics Education
Institution Management	Food and Nutrition
Interior Design	Clothing and Textiles
Teaching Vocational Homemaking	Home Economics Education

The College of Liberal Arts and Sciences grants the Bachelor of Arts degree in home economics. A minimum of 42 hours in home economics is required. This is for the profession of homemaking rather than for any of the salary-earning professional careers in home economics. The specialization is offered by the Department of Home and Family.

The Home Economics Honors Program

An Honors Program in the School of Home Economics provides individualized programs for the student with high academic ability.

Selection depends upon (1) recommendations of the faculty members, (2) cumulative grade point average (4.00 is minimum, below 4.25 requires recommendation by the faculty and the Honors Council), (3) a personal

interview for measuring other desirable characteristics, and (4) percentile ranks on the University's entrance examinations.

In selecting freshmen for participation in informal group discussions prior to formal honors study, percentile ranks on the University's entrance examinations, high school records, recommendations from the high school faculty, and the personal interview will be utilized.

For admission into the formal program, the student may apply independently to the Honors Council or may be encouraged by any member of the faculty to apply on the basis of his records and staff recommendations.

*Bachelor of Science Degree, SCHOOL OF HOME ECONOMICS
Apparel Design*

These courses offer preparation for designing of apparel or allied positions in the wholesale and retail fashion fields through training in textiles, creative design, draping, pattern making, and clothing construction.

General Studies Requirements (See Chapter 3. Waive GSB-3.) 84
Requirements for Concentration in Home Economics 98-100

GSA 101a or 110-8; 330 or 331; GSB 102a,b, 201b,c;	
GSC 100 or 101, 102, 103; 348 or 354	(35)
Art 225a or GSC 204	3
Art 100-15, 341	19
Chemistry 110, 240	(4) + 4
Clothing and Textiles 127-4 *, 131, 135, 231, 233, 300,	
322, 327, 329, 334, 339, 360, 364, 371, 433, 434	54-56
Food and Nutrition 100	3
Home and Family 227, 237, 323, 331, 341	13
Home Economics Education 306	2

* Students may request exemption from 127b.

Electives 8-10

Recommended electives: GSB 211a; Accounting 250; Clothing and Textiles 127b; Design 100; Journalism 101, 260, 393; Marketing 225, 325; Physical Education 113, 303; Physiology 300; Psychology 307; Theater 111, 414, 415; VTID 175a; Language; Mathematics.

Total 192

Dietetics

These courses give a strong scientific education to those interested in becoming dietitians in hospitals, college dormitories, industrial plants, health clinics, laboratories, or public health and welfare organizations. They meet the requirements of the American Dietetics Association.

General Studies Requirements (See Chapter 3. Waive GSB-3.) 84
Requirements for Concentration in Home Economics 82

GSA 101a, 301, 302; GSB 102-8; 201b,c; GSC 100 or 101,	
102, 103; GSD 108-9	(44) + 1
Accounting 250	.4
Chemistry 110, 240, 350	(4) + 8
Clothing and Textiles 127a	2
Food and Nutrition 100, 256, 320, 335, 356, 360a, 361, 362,	
363, 390, 420	38
Guidance 305	4

Home and Family 227, 237, 331, 341	13
Home Economics Education 307	3
Management 385	4
Microbiology 301	5
<i>Electives</i>	26
Recommended electives: Clothing and Textiles 131; Food and Nutrition 321, 360b, 421, 490; Home and Family 332; Microbiology 422; Management 382.	
<i>Total</i>	192

Foods in Business

These courses are for students who desire to enter the business field as home service representatives for utility companies, as demonstrators for manufacturers, or for other educational, experimental, and promotional work with household equipment and foods.

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in Home Economics</i>	86
GSA 101a, 301, 302; GSB 101a,b, 201b,c; GSC 100 or 101, 102, 103, GSD 108-9	(44) + 1
Accounting 250	4
Chemistry 110, 240, 350	(4) + 8
Clothing and Textiles 131	3
English 390	3
Food and Nutrition 100, 256, 320, 321, 335, 356	22
Home and Family 227, 237, 324, 331, 332, 341	20
Home Economics Education 306	2
Journalism 393	3
Marketing 225, 333	7
Microbiology 301	5
Printing and Photography 260a	4
Radio-TV 161	4
<i>Electives</i>	22
Recommended electives: Clothing and Textiles 127a, 135, 231; Food and Nutrition 371, 420; Home and Family 424; Journalism 331, 392; Marketing 337.	
<i>Total</i>	192

Food and Nutrition Science

These courses give a strong scientific education to those interested in preparing for graduate study in food, nutrition or related discipline; for research in university, industrial or governmental laboratories; or for educational and promotional work in industry or public health organizations.

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in Home Economics</i>	89
GSA 101a, 301, 313; GSB 102; 201; GSC 100 or 101, 102, 103	(35) + 1
Anthropology 402	4
Chemistry 111b, 305a, 350	(4) + 19
Clothing and Textiles 131	3
Food and Nutrition 100, 256, 320, 360a, 356, 390, 420, 421, 490	31

Guidance 305	4
Home and Family 227, 237, 341	10
Home Economics Education 306	2
Mathematics 111-10, 410-4	(9) + 5
Microbiology 301, 422	10
<i>Electives</i>	19
Recommended electives: Chemistry 230, 451a; Food and Nutrition 335; Health Education 325; Home and Family 331; Psychology 211a,b.	
<i>Total</i>	192

General Home Economics

These courses emphasize the personal development of the student and preparation to carry the responsibilities of homemaking and citizenship.

General Studies Requirements (See Chapter 3. Waive GSB-3.) 84

Requirements for Concentration in Home Economics 66

GSA 101a; GSB 101b,c; 201b,c; GSC 100 or 101, 102, 103; GSD 108-9	(30)
Chemistry 110, 240	(4) + 4
Clothing and Textiles 127, 131, 135, 233, 327	16
Food and Nutrition 100, 256, 320, 321, 335	18
Home and Family 227, 237, 323, 324, 331, 332, 341, 345b, 366	28
<i>Electives</i>	42
Recommended electives for a General Curriculum: Clothing and Textiles 231, 360; Health Education 310; Home Economics Education 111.	
Recommended electives for the Child Development Family Relations area: Guidance 412; Home and Family 345a, 407, 456, 466, 471; Psychology 301, 303, 304, 305; Sociology 340.	
Recommended electives for the Consumer Services area: Clothing and Textiles 300, 332, 339; Food and Nutrition 356; Home and Family 407, 424, 435, 471; Journalism 331, 360, 370, 391, 397; Radio-TV 161, 257.	
<i>Total</i>	192

Institution Management

These courses prepare students to fill positions as food service managers for residence halls, hotels, tearooms, school lunchrooms, and industrial or commercial restaurants. They meet the requirements of the National Restaurant Association.

General Studies Requirements (See Chapter 3. Waive GSB-3.) 84

Requirements for Concentration in Home Economics 88

GSA 101a, 301, 302; GSB 102a,b; 201b,c; GSC 100 or 101, 102, 103; GSD 108, 109	(44) + 1
Accounting 251a,b	8
Chemistry 110, 240, 350	(4) + 8
Clothing and Textiles 131	3
Food and Nutrition 100, 256, 320, 335, 360-8, 361, 362, 363 ..	32
Home and Family 227, 237, 331, 341	13
Home Economics Education 306	2
Management 371, 382, 385	12

Microbiology 301	5
Psychology 320	4
<i>Electives</i>	20
Recommended electives: Clothing and Textiles 127a; Food and Nutrition 321, 371, 390, 420; Home and Family 332; Microbiology 422.	
<i>Total</i>	192

Interior Design

These courses prepare students for positions on interior designing staffs of department stores, in consultant capacities in allied fields, and in establishing an interior designing business. They meet the educational requirements for membership in the American Institute of Interior Designers.

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in Home Economics</i>	96
GSA 101a; GSB 201b,c; GSC 101, 102, 103, 340, 341, 342	
or art history—choice; GSD 108a	(30) + 3
Chemistry 110, 240	(4) + 4
Clothing and Textiles 127a, 131, 135, 231, 300, 331, 380, 381, 382, 390, 391-15, 394, 395	58
Design 100	10
Food and Nutrition 100	3
Home and Family 227, 237, 331, 341	13
Home Economics Education 306	2
Industrial Technology 304a	3
<i>Electives</i>	12
Recommended electives: Accounting 250; Art 385, 471, 473; Clothing and Textiles 322, 371, 431, 432, 470; Guidance 305; Home and Family 323, 324, 332; Industrial Technology 316a; Journalism 370, 260a, 331, 393; Management 271, 371.	
<i>Total</i>	192

Merchandising

These courses provide fundamental training for positions as salespeople, buyers, and department managers in department stores and other retail stores dealing with apparel and home furnishings. They include work in marketing, advertising, accounting, journalism, and merchandising, as well as clothing, textiles, and home furnishings. A period of field experience in the area of the student's special interest is provided.

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.) ..	84
<i>Requirements for Concentration in Home Economics</i>	92-95
GSA 101a; 102-8, 201-8; GSC 100 or 101, 102, 103	(29)
Accounting 250	4
Chemistry 110, 240	(4) + 4
Clothing and Textiles 127-8 *, 131, 135, 231, 233, 300, 322, 327, 329, 334, 339, 360, 364, 371, 434	46-49
Food and Nutrition 100	3
Home and Family 227, 237, 323, 331, 341	15
Home Economics Education 306	2

* Students may request exemption from 127b

Marketing 225, 325, 329, 333, 337 or Finance 370	18
<i>Electives</i>	13-16
Recommended: Art 385; Clothing and Textiles 127b, 331, 382, 431, 474; Guidance 305; Home and Family 324, 332; Journal- ism 260a; Management 271, 371; Marketing 401.	
<i>Total</i>	192

Teaching Vocational Homemaking

These courses meet the needs of students desiring to teach home economics in school departments maintained according to the provisions of the federal vocational acts. A vocational home economics certificate requires a bachelor's degree in home economics from an institution and in a course of study approved for teacher training by the Vocational Division of the United States Office of Education and by the State Board for Vocational Education and Rehabilitation. Southern Illinois University is so approved for training home economics teachers.

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in Home Economics</i>	107
GSA 101a, 301; GSB 102-8; 211-8; GSC 101, 102, 103	(24) + 9
Chemistry 110, 240	(4) + 4
Clothing and Textiles 127, 131, 135, 233, 327	16
Food and Nutrition 100, 256, 320, 335	15
Guidance 305	4
Home and Family 227, 237, 323, 324, 331, 332, 341, 345b	25
Home Economics Education 111, 309-6, 310	12
Secondary Education 310, 352b	16
Electives in home economics	3
Electives in education	3
<i>Electives</i>	1
Recommended electives: GSB 331; Secondary Education 407, 440; Guidance 422; Education Administration 355; Instructional Ma- terials 417.	
<i>Total</i>	192

Extension

These courses prepare students for positions as Home Advisers, 4-H Club Agents or Advisers, and, with further training, extension specialists.

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in Home Economics</i>	100
GSA 101a, 301; GSB 102-8, 201-8, 211-8; GSC 101, 102, 103	(24) + 9
Chemistry 110, 240	(4) + 4
Clothing and Textiles 127, 131, 135, 233, 327, 360	20
Food and Nutrition 100, 256, 320, 335	15
Home and Family 227, 237, 323, 324, 331, 332, 341, 345b, 366 ..	28
Home Economics Education 111, 370, 371	13
Health Education 310	4
Journalism 393	3
Radio-TV 161	4
<i>Electives</i>	8

Recommended electives: Guidance 305; Secondary Education 310;
Home Economics Education 309-6; Instructional Materials 417.
417.

Total	192
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Industrial Technology

The complexity of our technological society has created an increasing demand for the services of new types of professional workers known as technologists. These are resourceful, creative men trained for proficiency and versatility in the techniques of industrial design and development, manufacturing, management and various technical liaison areas. The services of these men have become increasingly important because they have proven their capabilities and worth by serving effectively on the Technical-Industrial "team" with scientists, engineers, managers, and craftsmen. In so doing, they fulfill an important liaison function, and one for which they are ideally suited by virtue of their technical training and their knowledge and understanding of human relations.

Federal statisticians report that in the present decade the demand for technologists and related worker groups will exceed that for all other occupational groups. To the technologist, industry offers increasingly interesting and rewarding positions, with considerable potential for growth and advancement.

The student preparing himself for entrance into any of the numerous challenging areas of industrial technology must first acquire a comprehensive background of scientific, engineering, technological and business principles and applications, as well as specialization in at least one area. He must augment this background with a growing ability to utilize this knowledge effectively in making timely decisions and sound judgments. Because he will later be intimately involved with people in his work, the future technologist must acquire proficiency in personal relationships and acquire effective communication skills. He must also broaden his outlook enough to understand the socio-economic trends he observes, especially as they may presage changes in his work.

The industrial technology curriculum is a four-year concentration of courses leading to the Bachelor of Science degree and designed to prepare an individual for employment as a technologist in a variety of technological areas.

Bachelor of Science Degree, SCHOOL OF TECHNOLOGY

General Studies Requirements (See Chapter 3. Waive GSB-3.)	84
Requirements for Concentration in Industrial Technology	113
GSA 358	(6)
GSB 361	3
Mathematics 111-10	(9) + 1
Applied Science 307	5
Engineering 222	3
Engineering Technology 465	4
Industrial Technology 300, 314-6, 318c, 325, 343-3, 351b ...	22
Management 380, 382	7
Psychology 320	4
Technology 100, 101-9, 300c	14

Specialization	50
The student may elect to specialize in areas such as industrial design, manufacturing, supervision, processes, safety, aviation, transportation, and planning.	
Total	197

Instructional Materials

Courses in the utilization and administration of teaching materials are designed to train both audio-visual coordinators and librarians to become fully qualified instructional materials specialists who can administer all teaching materials.

Secondary Concentration

Persons trained primarily as teachers may qualify for part-time professional service in a school library by completing 28 hours of work in approved courses which are 308, 403, 405, 406, 407, 417, and 420.

Inter-American Studies

The Inter-American Studies program, under the direction of the Latin American Institute, was initiated in 1958 to meet the ever-increasing demand for personnel qualified to deal with questions related to Mexico and the countries in Central America, the Caribbean, and South America. Government, business, and other interests require the services of individuals who have a general comprehension of the problems and potentialities of the area, plus the necessary language skills to make possible graduates' highest-level performance in the field. Thus, the course of studies for this program is necessarily interdisciplinary. The student is given a firm general background in the history, geography, economics, anthropology, language, and literature of the English, Portuguese, and Spanish speaking countries in the New World. Further, special emphasis is placed upon the students' acquiring a working knowledge of Spanish and Portuguese. This level of linguistic skill is essential to permit a clear understanding of Latin Americans of all levels and backgrounds and as an indispensable skill or tool for anyone who intends to work in any professional capacity in Latin America regardless of an individual's specialized field of interest in business, government, agriculture, teaching, research, etc.

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSC-3.)	84
<i>Requirements for Concentration in Inter-American Studies</i>	83
GSB 303, 392	(6)
GSD FL	(9)
GSD 135-9, Portuguese	9
Anthropology 305a, 306a	6
Economics 419, 429	8
Foreign Languages: Spanish 201-9, 220-6, 320-6, 333-9	30
Geography 467	7
Government 453, 458	6
History 352a,b, and 3 hours chosen from 352c, 471, 473	9
Philosophy 340; 477 or 478	8

Electives 25

Total 192

Students coming to Southern Illinois University without any foreign language must take GSD 140-9 and Spanish 140 as prerequisites to the specified courses in the language. If their special interests demand, they should expect also to take such additional courses as desired in psychology, sociology, economics, or business administration.

Journalism

Journalism courses are designed to give thorough professional training in both theory and practice in a number of fields of journalism. The areas include daily and weekly newspapers, advertising, periodicals, radio and television news, education, free lance writing, industrial publications, news agencies, public relations, and research. In addition to courses, professional conferences, field trips, aid to high school newspapers and year-books are offered.

Bachelor of Science Degree, SCHOOL OF COMMUNICATIONS

Journalism students must demonstrate a working knowledge of typewriting based upon a minimum straight copy rate of thirty words per minute. This proficiency may be demonstrated during the first year and must be demonstrated by the end of the junior year. Enrollment in Secretarial and Business Education 201a for no academic credit is an acceptable substitute for the proficiency examination.

Subject to the approval of the department chairman, undergraduate students may receive as much as 12 hours of journalism credit toward their degree for work not taken in residence on the Carbondale campus.

All students' course schedules must be approved by the chairman or his representative.

General Studies Requirements (See Chapter 3. Waive GSB-3.) .. 84

Requirements for Concentration in Journalism 48

Journalism 101, 102 (Freshmen and sophomores) or 345, 346 (juniors, seniors) 103, 201, 202, 383-6, 399 22

One of the five specializations below 15-21

Advertising: 370, 371, 372, 373, 374, 376 21

Community Newspaper: 303, 330, 350, 351, 370, 371, 442 21

Magazine: 297, 303, 369, 397, 398, 442 18

News and Editorial: 303, 330, 390, 391, 442 15

Radio and Television: 303, 442, R-T 161, 251, 310, 385 20

Journalism electives to complete 48 hours 5-11

Electives 60

At least 40 hours of upper class course work in the departments of Anthropology, English, Economics, Foreign Languages, Government, History, Philosophy, Psychology, Sociology, or other areas as approved by the chairman exceptions may be made to meet the requirements of students preparing to teach high school journalism.

Total 192

*Bachelor of Science Degree, COLLEGE OF EDUCATION**Requirements for Concentration in Journalism:*

Journalism 101, 102, 103, 201, 202, 303, 390, 421, 422 28
 Recommended electives are Journalism 214, 260a, 370, 391.

Secondary Concentration

The 24-hour concentration in journalism consists of English 300, 392, and an elective in journalism.

Management

Courses are offered in these areas of management: general, production systems, and personnel management. Students who do not wish to specialize will select the first area. The latter two areas are more restrictive in their requirements. The objective is to provide a broad, general, liberal educational experience rather than a narrow professional training.

Bachelor of Science Degree, SCHOOL OF BUSINESS

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	....	84
<i>Professional Business Core</i>	.....	42
GSB 211a, and GSD 110	.....	(7)
Accounting 251-12	.....	12
Economics 214, 215	.....	6
Finance 320, 371	.....	9
Management 340, 481	.....	8
Marketing 225, 325	.....	7
<i>Requirements for Concentration in Management</i>	.....	36
GSB 102-8, 201-8	..... (12)	+ 4
Management 361, 350 or 380, 385, 479, 473	.....	20
Management: one of the Specializations below	.....	12
General: 327, 421, 475	..... (12)	
Personnel: 382, 480, 485	..... (12)	
Production and Management Systems: 451, 452, one of 350, 382, or 483	..... (12)	
<i>Electives</i>	.....	30
<i>Total</i>	.....	192

Marketing

Marketing consists of the performance of business activities that direct the flow of goods and services from producers to consumers and business users. The list of courses, below, reflects the philosophy that students seeking careers in selling, advertising, transportation, retailing, wholesaling, purchasing, credits, marketing research, and related fields need a balanced program of liberal and professional education.

Bachelor of Science Degree, SCHOOL OF BUSINESS

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	....	84
<i>Professional Business Core</i>	.....	42
GSB 211a and GSD 110	.....	(7)
Accounting 251-12	.....	12

Economics 214, 215	6
Finance 320, 371	9
Management 340, 481	8
Marketing 225, 325	7
Marketing Electives	12
Speech 301-4	4
<i>Requirements for Concentration in Marketing</i>	48
GSA 102-8, 201-8	(12) + 4
Economics 440, 441	8
Management 361, 479	8
Marketing 490 and one of five combinations: 329 and 401, 333 and 463, 337 and 438, 341 and 452, 336 and 439	12
<i>Electives</i>	18
<i>Total</i>	192

Mathematics

Students intending to concentrate in mathematics must plan schedules of mathematics courses numbered above 299 with a mathematics adviser. Mathematics grade must be at least C in courses numbered 150 or above.

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3.)	84
<i>Requirements for Concentration in Mathematics</i>	60
GSD FL (French, German, or Russian recommended)	(9)
Mathematics 111-10 or advanced standing	10
Mathematics 150-10, 252-9 (A student may by-pass any of these in which he can demonstrate competence.)	19
Mathematics electives numbered above 299, excluding 311 and 410, but including three of the following nine sequences: 305-6; 320-6; 335-6; 421-6; 428-6; 452-6; 475-6; 480-7; 483-8. At least one of the three sequences must be on the 400 level; either 320-6 or 421-6 must be included.	24
At least 6 hours in Physics courses numbering 300 or higher (or a replacement chosen from a list of alternative op- tions available in the departmental office).	(4) + 7
<i>Electives</i>	48
<i>Total</i>	192

Bachelor of Science Degree, COLLEGE OF EDUCATION

<i>Requirements for Concentration in Mathematics</i>	54
GSD FL (French, German, or Russian recommended)	(9)
Mathematics 111-10 or advanced standing	10
Mathematics 150-10, 252-9 (or by-pass)	19
Mathematics electives numbered above 299, excluding 410-16 but including 311 and three of the following ten sequences: 305-6; 320-6; 335-6; 421-6; 428-6; 452-6; 458-6; 475-6; 480-7; 483-8. At least one of the three sequences must be on the 400 level; either 320-6 or 421-6 must be included. The recommended sequences are 320-6; 335-6; 458-6	24
Physics 211a (211b,c recommended)	(4) + 1

Other requirements are listed under Secondary Education. Mathematics 311 may be substituted for Secondary Education 315.

Secondary Concentration

A secondary concentration in mathematics must include Mathematics 252a and at least 12 hours of courses numbered above 252a other than 410. At least a C is required in all mathematics courses numbered 150 and above.

Microbiology

Microbiology is a study of micro-organisms. It includes forms, classification, growth and reproduction, heredity, biochemistry, ecology, and effects on man. Such a program prepares one for graduate and eventually research work in governmental or private settings. Some of the specializations available include bacteriology, virology, immunology, serology, fermentation, and the testing and production of biological products.

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3.)	84
<i>Requirements for Concentration in Microbiology</i>	53
GSA 201-8, or equivalent	(8)
GSD FL	(9)
Mathematics 111-10	10
Microbiology 301, 302, 403, 425, 426, 441, 451	32
Microbiology electives to complete 43 hours	11
<i>Secondary Concentration</i>	24
Chemistry 111-14, 305-9, and electives (4) +	24
<i>Electives</i>	31
<i>Total</i>	192

Secondary Concentration

A secondary concentration in microbiology consists of 24 hours, to include 301, 302, and other courses determined by the student in consultation with his microbiology adviser.

Music

During each academic year, a series of distinguished musicians join the faculty and students for a period of workshops, seminars, and performances. The roster for the past few years has included the following: Carl Weinrich, organist; Ernest and Lory Wallfisch, viola and piano duo; Willi Apel, Louis Cuyler, and Nicholas Slonimsky, musicologists; Joseph Szigeti, violinist; Robert Goldsand, pianist; and Reginald Kell, clarinetist; and Nadia Boulanger.

In addition, artists from related fields have included Katherine Dunham, dancer; Edith Lutyens Bel Geddes, costume supervisor; and Max Kaplan, musicologist-sociologist.

General Requirements

The requirements for entrance and for graduation as set forth in this bulletin are in accordance with the published regulations of the National

Association of Schools of Music, of which the Department of Music is a member.

Each resident music student must maintain a satisfactory membership in either a university band, orchestra, or chorus every quarter he is enrolled at Southern Illinois University, with the exception of the student teaching quarter.

It is required that all students with a concentration in music reserve the ten o'clock hour on Mondays for music convocations and studio recitals.

Bachelor of Music degree students with a concentration in applied music must present a half-recital in their junior year and a full recital in their senior year. Those with a concentration in music education must present a half-recital in their senior year.

A minimum of ten recitals per quarter must be attended by each student concentrating in music; five recitals per quarter for those with a secondary concentration in music. A deficiency in recital attendance for any one year will result in the student's being given a grade of incomplete in his applied music.

Each candidate for the Bachelor of Music degree must pass the proficiency examination in secondary piano. A student with inadequate preparation in piano must elect class piano each quarter of his freshman and sophomore years. If he fails to meet the basic piano requirements at the end of the sophomore year, he must continue in class piano without credit until he passes the test. One concentrating in music education must also pass a proficiency test in voice or elect class voice until he can pass the proficiency test. It is the responsibility of each student, with the assistance of his adviser and instructors, to meet these minimum requirements.

Bachelor of Music Degree, SCHOOL OF FINE ARTS

<i>General Studies Requirements</i> (See Chapter 3. Waive GSC-3.) ..	84
<i>Requirements for Concentration in Music</i>	114-120
GSC 357-9	9
Music (Theory) 105-12; 205-9; 326-6; 441-6 (3) +	30
Music (Applied) 12 quarters of ensemble	12
Piano proficiency	0-6
One of the specializations listed below ¹	66
<i>Applied Music</i>	
Major instrument or voice, 12 quarters ²	48
Additional theory courses	6
Electives in music	12
<i>Music Theory-Composition</i>	
Major instrument or voice, 12 quarters	36
Advanced theory-composition courses	12
Electives in music	18
<i>Music History-Literature</i>	
Major instrument or voice, 12 quarters	24
Advanced and related courses in music history and literature	18

¹ Before the end of his sophomore year the student should choose an area of specialization. This choice is subject to approval by the faculty adviser and the chairman.

² For students combining this specialization with the prescribed courses for state certification in education, the applied concentration will be elected for 2 hours per quarter, totaling 24 hours.

Electives in music theory	12
Additional electives in music	12
<i>Total</i>	201-207

Music Education

The following requirements may be satisfied in twelve quarters; they meet the requirements for the State Special Teaching Certificate.

General Studies Requirements (See Chapter 3. Waive GSC-3.) 84
Requirements for Concentration in Music 88-95 |

GSC 357-9

(6)	+	3
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Music (theory) 105-12, 205-9, 326-9 or 441-6

(3)	+	24
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Music (education) 300a, 305i or v; 309a, 318a,b

12

(Three hours of above counted in Professional Education below)

Music (applied) 11 quarters of major ensemble and 11 quarters of major instrument or voice

33

Piano proficiency or class

0-6

Voice proficiency or class

0-1

Music: class woodwinds, brass, and strings

6

(2 hours except in major area and one hour of percussion—required of instrumental or combination majors)

Music electives to increase specialization in instrumental music (string, winds, keyboard, brass or percussion) and vocal music (choral, opera, music theater, elementary education)

4

*Professional Education Requirements*¹

27

English 391 or proficiency examination

(3)

Guidance 305

4

Secondary Education 310

4

Education elective

4

Music (Education Methods) 451

3

Secondary Education 352

12

Before a student is approved for student teaching he must satisfy the course of study and proficiency prerequisites as established by the Department of Music.

Total

199-206

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

These courses are for students who wish to specialize in music as part of their general cultural education. They may also be taken as background training by those who may plan to pursue advanced studies in such fields as music criticism and aesthetics.

Required courses are 105-12, 205-9, GSC 357-9, applied music courses totaling 12 hours, and electives in music to complete a total of 60 hours.

Secondary Concentration

The secondary concentration in music includes 105-12, 140-6, 240-6, GSC 357-9 and music electives to complete 42 hours. The student must attend a minimum of five campus recitals or concerts per quarter for a total of fifteen events.

¹ As a prerequisite to teaching in the public schools, an individual must pass a test on State Constitution and History or successfully complete either GSB 211b or Government 300.

Nursing

At present all of the program may be taken at the East St. Louis Center; or the first four quarters including the summer quarter of the first year which is preclinical and primarily liberal arts subjects, may be taken on the Carbondale Campus; the remainder must be taken at the East St. Louis Center starting in the fall quarter of the sophomore year.

Philosophy

General Studies courses in philosophy are available at each level for use in partial satisfaction of the requirements in Area C. The prospective philosophy student is advised to elect at least one such course at each of the first two levels.

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3.)	90
<i>Requirements for Concentration in Philosophy</i>	39
GSC 381, 382, 383, GSD FL	(15) + 3
Philosophy 300, 320, 481a, GSC 386, 387 (Any two)	6
Philosophy electives to complete 45 hours, 3 of which may be selected from philosophy courses in the first two levels of General Studies	30
<i>Secondary Concentration</i>	24
<i>Electives</i>	39
<i>Total</i>	192

Secondary Concentration

A secondary concentration in philosophy requires 24 hours, 6 of which may be selected from philosophy courses offered at the first two levels of General Studies and 12 of which should be selected from the courses listed above for the Bachelor of Arts degree.

Photography

These courses give thorough professional training in both theory and practice of photography. Students purchase supplies for most photography courses.

Bachelor of Science Degree, SCHOOL OF COMMUNICATIONS

<i>General Studies Requirements</i> (See Chapter 3. Waive GSC-3.)	84
<i>Requirements for Concentration in Photography</i>	59-61
Art 100-10	(3) + 7
Printing and Photography 260-12, 303, 309a, 341-10, 360a-3, 401, 402, 408, 428, 429 and additional courses depending upon specialization:	52-54
309b, and 360b or 360c or 364 for general photography	
360b,c and 364 for publications photography	
<i>Electives</i>	47-49
<i>Total</i>	192

Physical Education

These courses are intended to qualify young people for positions as teachers, coaches, or specialists in public and private elementary or secondary schools, colleges, and universities as well as other social agencies which promote physical activity programs. They have been designed to meet the requirements of state departments of education and other agencies which have adopted professional standards.

Complete and integrated experience in teaching physical education and assisting in coaching under qualified supervisors is provided in the co-operating schools of the area. Added experiences are gained through membership in the Physical Education Club; membership in professional associations; participation on intramural teams; assisting in service class testing; professional journals; and working with recreational and school groups in teaching techniques of various activities.

Bachelor of Science Degree, COLLEGE OF EDUCATION—MEN

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3.)	84
<i>Requirements for Concentration in Physical Education</i>	52
GSA 301	3
Physical Education for Men 100-18, 101, 303, 305, 341, 350, 354, 355, 370, 376, 420, and one sport theory course . . (3) +	45
Physiology 300	4
<i>Professional Requirements</i> (See page 000, item 4.)	20
<i>Secondary Concentration</i>	24
<i>Electives</i>	12
Recommended are Health Education 460, and Recreation and Outdoor Education 365.	
<i>Total</i>	192

Secondary Concentration—Men

A secondary concentration is 40 hours and must include 100-18, 303, 305, 350, 354, 370, 376, Physiology 300, and GSA 301.

Bachelor of Science Degree, COLLEGE OF EDUCATION—WOMEN

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3.)	84
<i>Requirements for Concentration in Physical Education</i>	58
Physical Education for Women 113, 114, 211, 212, 222, 224, 228, 242, 244, 303, 304-10, 308, 350, 351, 352, 353, 354, 355, 370 (3) +	50
Health Education 334, 460	8
<i>Secondary Concentration</i>	24
(Required for Standard High School Certificate; not required for Standard Special Certificate)	
<i>Professional Education Courses</i> (See page 000, item 4.)	29
<i>Electives</i>	(13)
Physical Education for Women 317, GSE 144a,b,d,e,i,m,p . .	3
Physical Education for Women 311, 374, 376, GSE 113e	2
<i>Total</i>	195

Anyone who transfers from another university and wants to concentrate

in physical education for women must complete a minimum of 15 hours in physical education senior college courses at Southern Illinois University.

Secondary Concentration—Women

<i>Requirements for a Secondary Concentration in Dance</i>	30
GSE 113a,b,d,e	
Music 200	
Physical Education for Women 273, 308, 312, 313, 374, 376, 405	
Electives GSC 203, 207, GSE 113c, 114p, Music 346, Physical Education for Women 272, 304e, Theater 305.	
<i>Requirements for a Secondary Concentration in Physical Education for the High School Teacher</i>	30
Health Education 334	
Physical Education for Women 113, 222, 224, 228, 242, 304–8, 308, 353, 354, plus 2 additional activity courses	
<i>Requirements for a Secondary Concentration in Physical Education for the Elementary School Teacher</i>	30
GSE 112, 113b,d	
Health Education 334	
Physical Education for Women 304, 308, 350 or 319, 353, 354, plus 4 additional activity courses	

Physics

A student considering a concentration in physics is urged to consult with a representative of the physics faculty.

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA–3.) ..	84
<i>Requirements for Concentration in Physics</i>	100–113
GSD FL	(9)
Chemistry 111–10	(4) + 6
Mathematics 111–10, 150–10, 252–9, 305–6	38
Physics 211–15 (or 111–9, and 112–3 or 206–9 and 207–3); 301, 304, 305, 307, 309, 310, 401, 404, 410a, 415–12, plus 4 hours from 311, 312, and 418 ..	(4) + 56–59
<i>Electives</i>	5–8
Recommended: Applied Science 420, 421, 422; Chemistry 235, 461, 464; Engineering 222, 313, 334, 335, 352, 361, 420, and 462; Mathematics 420, 421, 452, 480, and 483.	
<i>Total</i>	192

Bachelor of Science Degree, COLLEGE OF EDUCATION

For this degree the requirements differ from those for the Bachelor of Arts degree in the following respects: No foreign language is required. Thirty-three hours of 300 or above physics courses, including 301, 305, 415–12 and 6 hours of laboratory courses selected from 307, 311, 312 and 418.

Secondary Concentration

A secondary concentration in physics requires 24 hours and must in-

clude Physics 211-15 (or for students not taking calculus, Physics 206-9 and 207. Other courses not requiring calculus include Physics 300, 309, 310, 311, and 312).

Physiology

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3.)	84
<i>Requirements for Concentration in Physiology</i>	42-72
GSD FL	(9)
Physiology electives selected in consultation with the chairman to total at least 42 hours	42
A background of basic courses in chemistry, mathematics, and physics is required. Courses in botany and zoology are recommended	0-30
<i>Electives</i>	36-66
<i>Total</i>	192

Secondary Concentration

A secondary concentration in physiology requires a minimum of 24 hours.

Plant Industries

Instruction, research, demonstration, and consultation, both basic and applied, are provided in the areas of production and utilization of fruits, vegetables, grain and forage crops, and ornamentals, and in the field of soils and soil management.

Courses are offered in all phases of intensive and extensive crop production, soil science, soil and water conservation, fertilizers and plant nutrition, weed control, and related subjects.

The student has ample opportunity to select courses in other areas within the School of Agriculture or related fields outside of agriculture, such as business, and the biological and physical sciences; this enables him to include in his training not only the *how* but the *why* in crop production and utilization.

Bachelor of Science Degree, SCHOOL OF AGRICULTURE

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3.)	84
<i>Requirements for Concentration in Plant Industries</i>	72
	<div>GENERALSCIENCE</div>
GSD 211a	(4)(4)
GSD 103, Mathematics 111-10	(12) + 1(12) + 1
Chemistry 111a or b or GSA 101b	(4) + 1(4) + 1
Chemistry 111-10	010
Plant Industries 103, 264, 309, and others	3636
Agricultural Industries, Animal Industries, Forestry (work in two departments)	77
Electives in agriculture	175
Mathematics, physical sciences, and biological sciences	10-1213
<i>Electives</i> (to complete the program objectives)	36
<i>Total</i>	192

Printing Management

The printing management course of study is designed to prepare students to enter the printing field as supervisors, cost estimators, and salesmen.

Bachelor of Science Degree, SCHOOL OF COMMUNICATIONS

General Studies Requirements (See Chapter 3. Waive GSB-3.)	84
Requirements for Concentration in Printing Management	71
GSB 211-8	(8)
GSD 108-9	(9)
Accounting 250, 415	8
Economics 214, 215	6
Management 340, 371, 385	12
Marketing 225	3
Printing and Photography 302, 308-7, 312, 314, 365, 366, 379-9, 381-8, 384	42
Electives	37
Total	192

Psychology

Undergraduate courses in psychology introduce the student to the methods and findings of the scientific study of human behavior. He is given an opportunity to learn what research has shown about how we perceive, learn, and think; how individuals differ from one another; how the personality develops from infancy to maturity; and how interpersonal factors affect human relations in the home, on the job, and in the community.

The undergraduate concentration in psychology is primarily aimed at providing broad general education rather than specialized professional training in psychology; to become a professional psychologist the student must usually complete from two to four years of postgraduate study.

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

General Studies Requirements (See Chapter 3. Waive GSB-3.)	84
Requirements for Concentration in Psychology	44
GSA 301	4
GSD FL	(9)
Psychology 211-8	8
For Students Planning Graduate Study: 311; any one of 312, 313, 314; any two of 301, 303, 304, 305, 307, 320, 322; any two of 404, 406, 407, 408, 409, 421, 431, 440, 451, 461, 471; and any two additional courses from above. For Students Planning no Graduate Study: 32 hours including at least three 400-level courses	32
Electives	64
Total	192

Secondary Concentration

Twenty-four hours are required and may be selected from courses listed in this catalog.

Radio-Television

Bachelor of Science Degree, SCHOOL OF COMMUNICATIONS

<i>General Studies Requirements</i> (See Chapter 3. Waive GSC-3.)	84
<i>Requirements for Concentration in Radio-Television</i>	48
Radio-Television 161, 251, 252, 260, 273, 351, 352, 363, 364, 373, 374 (8-12), 383, 393, and electives to total 48 hours	
<i>Secondary Concentration in a Related Area</i>	24
<i>Electives</i>	36
<i>Total</i>	192

Each student with a concentration in Radio-Television must by the end of his sophomore year:

1. Either (a) successfully pass an English Qualifying Examination, or (b) in lieu of such an Examination, achieve a grade of *B* in both GSD 101, 102, or (c) a grade of *C* in English 391, or (5) if the student has a secondary concentration in English, a grade of *C* in English 390.
2. Either (a) demonstrate proficiency in typing at 30 words per minute by passing a test administered by the Department of Secretarial and Business Education, or (b) pass Secretarial and Business Education 201a with a grade of *B*.

Recreation and Outdoor Education

Because of its relatedness to many academic fields, the recreation and outdoor education curriculum at Southern Illinois University builds its foundation on a good General Studies program and draws from several colleges and departments in the preparation of leaders for the many positions concerned with the recreative use of leisure time.

The curriculum emphasizes the practical as well as the theoretical aspects of recreation leadership. In addition to the General Studies requirements, several special courses are required in the student's professional field.

Each student is expected to choose courses which will give him a broad background in recreational activities and skills. These courses may be selected from such areas as music and dance, arts and crafts, drama, sports and games, and nature and conservation.

Students with a concentration in Recreation and Outdoor Education must complete 16 hours of practicum in two areas of interest, have 28 hours of professional recreation courses, and work closely with the department chairman in choosing related courses in other departments of the University, according to the student's chosen area of specialization.

The Department of Recreation and Outdoor Education offers courses leading to leadership specialization in (1) school and community recreation, (2) recreation for special populations, (3) outdoor recreation management, and (4) outdoor education.

Those students who wish to pursue a concentration in recreation and desire to teach must fulfill the course requirements in the College of Education, including a teaching concentration and practice teaching.

Students who have a concentration in recreation and do not fulfill the requirements in the College of Education for teaching must sign a statement indicating that they understand that they do not meet the state

and college requirements for teaching and intend to work in recreation positions.

Students concentrating in recreation are encouraged to obtain the following certificates: American Red Cross Life Saving and Water certificate, American Camping Association Campcraft certificate. Other certificates in the activity and instructional areas are also available.

Bachelor of Science Degree, COLLEGE OF EDUCATION

General Studies Requirements (See Chapter 3. Waive GSB-3.) 84

Requirements for Concentration in Recreation and Outdoor Education 85-107

Government 232 5

Guidance 305 4

Health Education 345 4

Management 340 4

Recreation and Outdoor Education 201, 202, 310, 320, 330,
365, 425, 490 40

Speech 303 4

One of the Following Four Specializations: 24-46

Community Recreation

GSA 312, 340 (6)

GSB 321 (3)

Art 306 4

Technical and Industrial Education 303 4

Music 200, 300b 6

Physical Education 220, 221 4

Instructional Materials 417 4

Psychology 301, 303, 304 12

Sociology 340, 373 8

Recreation For Special Populations

GSB 321 (3)

Health Education 203 3

Physical Education 220, 221, 305 6

Psychology 301, 303, 304 12

Recreation and Outdoor Education 302, 340 6

Sociology 372, 373 8

Special Education 410 8

Outdoor Recreation Management

GSA 312, 340 (6)

Botany 313, 341 6

Forestry 350a, 410 6

Geology 221 5

Plant Industries 301, 304, 306a 10

Zoology 102, 103, 310, 303 19

Outdoor Education

Students who plan to teach, with an area of concentration in Outdoor Education, should choose their electives from the courses listed below:

Recreation and Outdoor Education 301 4

GSA 312, 340 (6)

GSB 321 (3)

Education Administration 355 4

Guidance 442 4

Psychology 301, 303	8
Instructional Materials 417	4
<i>Electives</i>	1-23
<i>Total</i>	192

Students concentrating in recreation are encouraged to obtain the following certificates: American Red Cross First Aid certificate, American Red Cross Life Saving and Water certificate, American Camping Association Campcraft certificate and other certificates in instructional areas.

Religious Studies

Secondary Concentration

The secondary concentration in religious studies (30 hours) draws on the offerings of several departments and programs. Exceptions to alternatives listed may be approved by the chairman of religious studies.

<i>Western and Nonwestern Religious Thought</i>	18
GSC 307, 311, 312	9
Religious Studies 201-6 and GSC 310; or Religious Studies 203-9, and GSC 310; or Religious Studies 203c, and 301, and GSC 310	9
<i>Departmental Sequences</i>	12
English: 431a, 438, 473 and GSC 345	
History: 304-9, 311 or 415b	
Philosophy: 300, 301, 340 or 443 and GSC 382, 383	
Sociology: 333, 340 or 351 and GSB 201b, 325, or 341	
Psychology: 305 or 307 and GSB 201-8	

Russian and East European Studies

Secondary Concentration

A secondary concentration in area studies with specialization in Russian studies or in East European studies is offered especially for those students who also work for a concentration in foreign languages: Russian for Russian studies; German, Russian, or French for East European studies.

For either specialization a minimum of 24 hours must be earned in the chosen field, at least 12 of them in principal courses, the rest by electives. Not more than three courses in any one subject area will be counted toward fulfillment of the requirements. In exceptional cases an elective course may be substituted after consultation with the adviser for the course of study.

Principal courses for the *Russian studies* consist of Economics 460, GSB 380, Geography 464, Government 453, History 372. Electives are GSB 312, Anthropology 305b, 306b, Economics 418, 481, Geography 462, Government 455, History 312, 430.

Principal courses for the *East European studies* consist of GSB 380, 390, Economics 418, Geography 462, Government 455, History 312, 430. The electives are GSB 312, Anthropology 306b, Economics 460, 481, Geography 464, Government 453, History 372. One reading course or one independent-studies course can be used in fulfillment of the requirements. Each student's list of courses, however, should be approved by the adviser.

Secondary Education

One who is preparing to teach in junior high school, high school, or junior college does not concentrate in secondary education but must concentrate in any of the areas listed below.

The Department of Secondary Education concerns itself with the sequences of professional education courses that lead to certification for teaching in the junior high school, the high school, and the junior college. In addition, it advises students concerning areas of academic concentrations.

Bachelor of Science Degree, COLLEGE OF EDUCATION

A student in the College of Education who is preparing to teach in junior high school or high school may select areas of concentration in any of the following:

Agricultural Education	Foreign Languages	Physical Education
Art Education	Geography	Physical Science
Biological Sciences	Government	Physics
Business Education	Health Education	Social Studies
Botany ¹	History	Speech
Chemistry	Home Economics	Technical and Industrial
Economics	Journalism	Education
English	Mathematics	Theater ²
English Language Arts	Music Education	Zoology

Secondary Concentration

With the consent of an academic adviser, a secondary concentration may be selected from the following:

Biological Sciences	Health Education	Physical Education
Botany ¹	History	Physics
Business Education	Home Economics	Physiology
Chemistry	Education	Psychology
Driver Education	Instructional Materials	Sociology
Economics	Journalism	Speech
English	Mathematics	Technical and Industrial
Foreign Languages	Microbiology	Education
Geography	Music	Theater
Government	Philosophy	Zoology ¹

Standard High School Certificate

A student may enter the Secondary Education program of the College of Education by transfer (1) from the General Studies program (provided he has attained 64 quarter hours), (2) from other academic units, or (3) from other institutions. In each case, he is subject to the following requirements.

1. He must meet the requirements related to the state and federal constitutions satisfied by either Government 231, 300 or one of the following: GSB 211b, 300a.

2. There is no general requirement in foreign language in the Depart-

¹ A student with a concentration in botany or zoology should have a secondary concentration in the other in order to meet certification standards for teaching biology at the high school level.

² In choosing this concentration, the number of hours required is 36; a second concentration of 36 hours must also be chosen; a secondary concentration of 27 hours is also required.

ment of Secondary Education except in those situations where the student must meet a foreign language requirement as part of his major academic concentration.

3. He must complete either one area of concentration of at least 48 hours or one area of concentration of 36 hours and two minor areas with a sufficient number of hours to meet the teaching requirements for each. (Certain broad areas including biological sciences, English language arts, physical education, physical sciences, and social studies have special certification requirements. Students electing to work in these areas should adhere closely to the course of study presented through the designated academic adviser.)

4. He must, if working for certification at the secondary level, complete the following sequence of professional education courses, for at least 32 hours.

Guidance 305	4
Secondary Education 310, 315; 352-12 to 16 Student Teaching .	19-23
Select at least two courses from the following:	6-8
Agricultural Industries 311	
Art 308	
Educational Administration 355	
Guidance 422a	
Home Economics Education 310	
Technical and Industrial Education 408	
Instructional Materials 417	
Secondary Education 407, 440	

5. He must satisfy the Student Teaching Prerequisites, pages 93-94 of this catalog. Anyone who wishes to qualify for the Standard Special Certificate for grades K through 12 should consult page 49 of this catalog.

A student in an academic unit other than the College of Education who desires to obtain a Standard High School Certificate should follow the teacher preparation program as described in this bulletin.

Standard Special Certificate

The Standard Special Certificate is valid for four years for teaching the special subject or subjects named on the certificate in grades kindergarten through 12. This certificate may be issued to one who has a bachelor's degree and presents certified evidence of having earned credit as follows:

<i>General Studies Requirements</i> (See Chapter 3. Waive GS-3.)	84
<i>Professional Education Requirements</i>	32
Guidance 305	4
Secondary Education 315 or Special Methods	3
Educational Administration 355	4
Secondary Education 352 and Elementary Education 351 ..	12-16
Two of the following courses:	6-9
Agricultural Industries 311	
Art 308	
Guidance 422	
Home Economics Education 310	
Instructional Materials 417	
Secondary Education 310, 407, 440	
Technical and Industrial Education 408	
<i>Area of Specialization</i>	48

<i>Electives</i>	28
<i>Total</i>	192

Secretarial Studies

Bachelor of Science Degree, SCHOOL OF BUSINESS

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Professional Business Core</i>	42
GSB 211a, GSB 110	(7)
Accounting 251-12	12
Economics 214, 215	6
Finance 320, 371	9
Management 340, 481	8
Marketing 225, 325	7
<i>Requirements for Concentration in Secretarial Studies</i>	61
GSB 102-8, 211, GSD 110	(19)
English 300	4
Management 271, 385	8
Secretarial and Business Education 201-9, 221-12, 241, 304, 324-8, 326, 341, 426, 427	49
<i>Electives</i>	5
<i>Total</i>	192

Sociology

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in Sociology</i>	38
GSB 201-8 (4 hours count toward the concentration)	(8)
Sociology 301, 302, 308, 312	15
Sociology electives in courses whose second digit is not 8, to complete 42 hours	23
<i>Secondary Concentration</i>	24
<i>Electives Courses in College of Liberal Arts & Sciences</i>	46
<i>Total</i>	192

Social Work

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3.)	84
<i>Requirements for Concentration in Sociology</i>	43
GSB 201-8 (4 hours count toward the concentration)	(8)
Government (2 courses)	5
Sociology 301, 302, 308, 312, 375, 383, 481, 482	30
Sociology electives to complete 42 hours	8
<i>Secondary Concentration</i>	24
<i>Elective Courses in College of Liberal Arts & Sciences</i>	41
<i>Total</i>	192

Secondary Concentration

A secondary concentration in sociology consists of a minimum of 24 hours.

Special Education

Each area of concentration in special education leads to certification for teachers of a specific kind of exceptional child.

Students who are concentrating in other areas of education may qualify for the above mentioned special certificate for teachers of exceptional children by taking variable hours of additional course work in a specific area of exceptionality. Usually this course work can be taken in place of regular electives, and can be obtained in the junior and senior years. This permits a student, by time of graduation, to qualify for both his regular teaching certificate and the special certificate.

Bachelor of Science Degree, COLLEGE OF EDUCATION

Students may pursue a concentration in special education with program emphasis in any of three areas of specialization: the emotionally disturbed (maladjusted), the educable mentally retarded, and the deaf and hard-of-hearing (acoustically handicapped).

General Studies Requirements (See Chapter 3. Waive GSC-3.) 84

Requirements of a Concentration in Special Education 39

GSB 101, 201, 300b,c (22)

GSC 100, 101, 102, and 103 (9) + 3

GSC 201, 202, 203, 209, 210 (any two) (7)

GSC 317, 345 or 365 6

GSD 101, 102, 103, Math (9) + 9

Art 300 or Technical and Industrial Education 303 4

Government 300 or GSB 211b 4

Mathematics 310 4

Music 300b or 306 3

Physical Education for Women 319 4

Two elective hours of Physical Education Activity 2

Elementary Education 31-36

GSB 331 or Educational Administration 355 3-4

Elementary Education 314, 337, and 351b 20-24

Guidance and Educational Psychology 412 4

Psychology 301 4

One area of Specialization 44-56

EDUCATION OF MALADJUSTED CHILDREN 52-56

Special Education 410a, 411, 413a, 414, 420 20

Psychology 305, 307, 431, 465 16

Sociology 427 4

Elementary Education 351b, 437 12-16

EDUCATION OF THE MENTALLY RETARDED 44

Special Education 410b, 413b, 414, 429b 16

Speech Pathology and Audiology 428 4

Elementary Education 351b 12

Guidance 422a 4

Electives (300 level or above) may be chosen from the following areas: Guidance and Educational Psychology, Audio-Visual aids, related courses in sociology, psychology, economics, or health education, Rehabilitation, related courses in other areas of Special Education 8

Students in secondary education who wish to qualify for this certification must have the above courses and may need to take additional courses which are required in the elementary education program but which are not required in the secondary program.

EDUCATION OF THE ACOUSTICALLY HANDICAPPED	54
Instructional Materials 301	2
Psychology 301, 414	8
Guidance 422a	4
Special Education 410d, 414, 415, 420d, 421	20
Speech Pathology and Audiology 200, 405a, 406, 416, 419	20
One hundred twenty additional clock hours of supervised practicum and clinical practice in the areas of Hearing, Speech and Speech-reading are required for an Illinois Certificate—Teacher of the Deaf.	
Total	198-215

Speech

Bachelor of Science Degree, SCHOOL OF COMMUNICATIONS

60 HOUR CONCENTRATION

General Studies Requirements (See Chapter 3. Waive GSB-3 or GSC-3.)	84
Requirements for Concentration in Speech	54
GSC 200, GSD 103	(6)
Speech 102, 201, 202, 205, 209, 300 or 104, 301, 313, 407a, 407b or 417 or 418, 408 and 16 additional hours	54
Electives	54
Total	192

48 HOUR CONCENTRATION

General Studies Requirements (See Chapter 3. Waive GSB-3 or GSC-3.)	84
Requirements for Concentration in Speech	42
GSC 200, GSD 103	(6)
Speech 102, 200, 201, 202, 205, 209, 313, 407-4	26
Speech electives	16
Secondary Concentration	24
Electives	42
Total	192

Interpretation

General Studies Requirements (See Chapter 3. Waive GSB-3 or GSC-3.)	84
Requirements for Concentration in Speech (Communications)	59
GSC 200, GSD 103	(6)
English: A course of study of 16 hours of English will be worked out on an individual basis.	16
Speech 102 or 313, 104, 202, 209, 309, 323, 301, 408, 434, and	

any two of 422, 423, 424, (4 hours elective)	43
<i>Electives</i>	49
<i>Total</i>	192

If a teaching certificate is desired the following changes are necessary:

1. The 10 hours of electives allowed in this course of study should be taken in Interpretation.
2. The secondary concentration should be the regular English secondary concentration.

*Bachelor of Science Degree, COLLEGE OF EDUCATION OR
Bachelor of Science Degree, SCHOOL OF COMMUNICATIONS*

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3 or GSC-3.)	84
<i>Requirements for a Concentration in Speech</i>	48
GSC 200, 203	(6)
GSD 103	(3)
Radio-TV 367	3
Speech 102, 104 or 200, 202, 205, 209-1, 323, 427	23
Speech Pathology and Audiology 428	4
Theater 111-3, 208-1, 402a	8
Electives in speech and/or theater	10
<i>Professional Education Requirements</i>	32
Guidance 305 or Psychology 303	4
Education: two courses ¹	8
Secondary Education 310, 352	16
Speech 406	4
<i>Secondary Concentration</i>	24
One secondary concentration is required in a separate area with a sufficient number of hours to meet the teaching requirements for that area. A secondary concentration in English or social sciences is recommended.	
<i>Electives</i>	4
<i>Total</i>	192

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSB-3 or GSC-3.)	84
<i>Requirements for Concentration in Speech</i>	42
GSC 200	(3)
GSD 103	(3)
Speech 102, 202, 304	10
Speech electives to complete 48 hours	32
<i>Secondary Concentration</i>	24
<i>Electives</i>	42
<i>Total</i>	192

Secondary Concentration

A 30-hour secondary concentration in speech should be planned in con-

¹ The Education courses referred to above are Educational Administration 355, Guidance 422, Instructional Materials 417, Secondary Education 407, 440.

sultation with the chairman of the department or the director of speech education. Students electing speech as a secondary concentration to a teaching concentration must include Speech 406.

Speech Pathology and Audiology

Speech pathology and audiology is an area which has as its objective the training of qualified personnel to work with people impaired in either speech or hearing. Positions in this field are available in the public schools, colleges, and universities, and in highly specialized public or private clinics. Experience is obtained through work at the University's Speech and Hearing Clinic, which is one of the participating agencies in the Cooperative Clinical Services. Additional practical experience is available at the University School; a six-week summer camping program in cooperation with the Division of Services for Crippled Children and the Easter Seal Society; the Marion V.A. Hospital, A. L. Bowen Children's Center, and the Anna State Hospital; rehabilitation work sponsored by the Division of Vocational Rehabilitation. Programs of study are designed to meet the academic requirements for the Certificate of Clinical Competence of the American Speech and Hearing Association. Certification requires a master's degree or its equivalent, and students are encouraged to attain this level.

A student in the School of Communications who plans to be a public school speech therapist in Illinois must meet the following required courses to obtain a Limited State Special Certificate.

1. GSB 201c and Psychology 301; Elementary Education 314, 337; GSB 331; Guidance 422a; GSD 103 with a minimum grade of C; GSB 201b or 211b; Government 300; English 391 or proficiency examination. In addition, the following courses should be taken during the student's professional quarter, when he does his student teaching: GSB 331 or Elementary Education 355 or Instructional Materials 417; Elementary Education 351b (Student teaching, 8 hours).

2. Additional courses required for certification are Guidance 412 or 305 or Health Education 312 and Special Education 200 or 414.

3. Thirty to 38 hours of speech pathology.

4. Twelve hours in the field of hearing. (416, 406, 419)

5. Two hundred clock hours (275 ASHA) of supervised case work in a teacher-training center. (The requirement is satisfied by Elementary Education 351b and/or Speech Pathology and Audiology 405).

The above items 2, 3, 4, 5 are pertinent for those not wishing to be public school speech therapists.

Bachelor of Science Degree, SCHOOL OF COMMUNICATIONS

The following applies toward certification requirement of the American Speech and Hearing Association.

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3 or GSB-3.)	84
<i>Requirements for Concentration in Speech Pathology and Audiology</i>	64
GSB 201c	(4)
Psychology 301	4
Guidance 412 or 305 or Health Education 312	4
Guidance 422a	4
Speech Pathology and Audiology 200, 203 or 409, 212, 318, 319,	

405-12, 406, 412 or 415, 414, 416, 419	52
<i>Electives</i>	44
<i>Total</i>	192

The following meets requirements for a state teaching certificate in addition to a concentration in Speech Pathology and Audiology.

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3 or GSB-3.)	84
<i>Requirements for Concentration in Speech Pathology and Audiology</i>	89-95
(Courses listed above.)	64
GSB 331	3
Elementary Education 314, 337, 351b	20-24
Special Education 200 or 414	2-4
<i>Electives</i>	13-19
<i>Total</i>	192

Bachelor of Science Degree, COLLEGE OF EDUCATION

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3 or GSB-3.)	84
<i>Requirements for Concentration in Speech Pathology and Audiology</i>	97-103
GSB 201b or 211b or 300a or Government 300	5
Other requirements listed above	89-95
Educational Administration 100	3
<i>Electives</i>	5-11
<i>Total</i>	192

Other requirements for the degree are given under the College of Education on pages 21-22.

Student Teaching

Supervised student teaching is conducted in cooperating public schools in Southern Illinois and the Chicago City Schools. The College of Education requires 12 to 16 hours of student teaching for the Bachelor of Science degree. Students are expected to enroll for the entire 12 to 16 hours during one quarter.

One of the following professional-quarter plans of student teaching must be pursued by the student with the approval of the Chairman of Student Teaching.

The student teacher, under either plan, must follow the same daily schedule as the supervisor. This means that the student teacher is to remain in school for an entire day.

Elementary Professional Quarter

The student-teaching quarter is devoted to full-time student teaching in an approved off-campus center. The student teacher earns 16 hours of credit and is expected to participate in the teaching program for the entire school day, following exactly the schedule of the cooperating teacher.

The University supervisor calls a meeting of student teachers planning to do elementary student teaching at least one quarter in advance of the

student teaching quarter. The purpose of this meeting is to complete plans and answer questions pertaining to the professional quarter.

Elementary Education 351 (student teaching) grants 16 hours of credit.

Early-Childhood Education Professional Quarter

The early-childhood education professional quarter is essentially the same as the one described for elementary student teachers with this exception: student teachers in this area teach full time for a quarter in either kindergarten or one of the primary grades. Students must indicate their preference at the time of filing the final application for student teaching.

Elementary Education 350 (student teaching) grants 16 hours of credit.

Secondary Professional Quarter

(EXCEPT VOCATIONAL AGRICULTURE AND VOCATIONAL HOME ECONOMICS)

Twelve Quarter-Hour Plan. This professional-quarter plan is designed for secondary student teachers in the College of Education and for other student teachers desiring to earn additional hours during any one quarter.

Secondary Education 352 (student teaching) grants 12 hours of credit. Additional hours may be earned by registering for courses taught on campus during the evening or on Saturday.

Sixteen Quarter-Hour Plan. This professional-quarter plan is designed for secondary student teachers in the College of Education and for other student teachers desiring the maximum amount of student teaching offered by Southern Illinois University during any one quarter.

Secondary Education 352 (student teaching) grants 16 hours of credit. This program *does not* permit additional hours to be earned without the approval of the professional quarter committee.

Vocational Agriculture Professional Quarter

A 3.25 grade-point average is required before one may take student teaching.

Psychology and education courses required include Guidance 305 and Secondary Education 310. Agricultural Education courses required include Agricultural Industries 210 and 311.

For the professional quarter the student registers for Agricultural Industries 309, 312a and b.

Seniors preparing to be teachers of vocational agriculture do their student teaching in a professional quarter. The first four weeks of the quarter are devoted to an intensive study of methods. The last eight weeks of the quarter are given to supervised teaching in an approved off-campus center. Student teaching is done either fall or winter quarters.

The two weeks summer practice is taken the week prior to and the first week of school at the center where they plan to student teach. Altogether the student has ten weeks of practice experience.

The student is responsible for transportation to and from the center and also housing. It is recommended but not mandatory that the student teacher reside in the community while teaching. He is expected to remain on duty as long as the supervising teacher requires. He makes necessary visits after school hours to the homes of students to observe supervised farming programs. This may be true also for Saturday mornings. The

student teacher is expected to attend all evening meetings such as the FFA, PTA, and adult farmer classes.

Vocational Home Economics Professional Quarter

A professional-quarter student preparing to teach home economics should register for Secondary Education 352-12, Home Economics Education 310, 311.

For three-fourths of the quarter (approximately 9 weeks), the student does full-time student teaching in an approved off-campus center. During the first week of the quarter, the student reports for prestudent-teaching day and to the Department of Home Economics Education for intensive work in the courses listed above. Likewise, at the end of the off-campus student-teaching period the student reports for the remainder of the quarter including the examination period to the Department of Home Economics Education for further intensive work in the evaluation of student teaching.

In the off-campus student-teaching centers, students are assisted in locating housing by the university supervisors of home economics education and the local public school teacher. Students who live in University Housing should indicate to the coordinator of housing the time when they will be off-campus for student teaching and/or Home Management House residence so that adjustments in contracts can be made. Students living in housing other than university housing should make arrangements directly with those involved.

The Department of Home Economics Education calls a meeting of students planning to do student teaching at least one quarter in advance of the student teaching period to plan for the professional quarter.

The Professional Quarter Committee

A representative from the College of Education, College of Liberal Arts and Sciences, School of Agriculture, School of Business, School of Communications, School of Fine Arts, School of Home Economics, and School of Technology serve on the professional quarter committee. The purposes of this committee are as follows:

1. To recommend to the Chairman of Student Teaching regulations and procedures applying to all student teachers working on the professional quarter plan.

2. To review petitions for special student teaching consideration where a student feels that he is an exception to the rules and regulations pertaining to the professional quarter. In most cases final reviewing is made from a written request form known as the *Petition for Special Student Teaching Consideration*. However, the committee as a whole feels that students should not be denied an opportunity of presenting their own cases in person to the committee.

3. To afford each college or school that is concerned with student teaching a personal representative.

No student may pursue a student teaching assignment other than one described previously under one of several professional-quarter plans, unless approved by the professional quarter committee. To request such approval, the student must complete the forms known as the *Petition for Special Student Teaching Consideration*. These forms may be secured from the office of the chairman of Student Teaching, Room 135, Wham Education Building. Petitions will be accepted for review by the profes-

sional quarter committee no later than the end of the second week of the quarter preceding the student teaching quarter. However, petitions may be filed as early as the filing of the final application for student teaching.

Since student teaching is designed in terms of the needs of beginning teachers for complete and integrated experience, and since more than one supervisor may be in charge of the work done by the student teacher, no part of the work may be dropped by the student teacher with the expectation of continuing the remainder of the work for credit. Furthermore, if one supervisor finds it necessary to drop a student teacher from a part of the program, the College of Education reserves the right to require such student teacher to drop all of his program of assigned student teaching rather than merely a part of it.

Two applications are necessary for student teaching. The preliminary or first application must be made during the first six weeks of the winter quarter, approximately one year prior to graduation. Announcements will appear in the *Egyptian*; major departments will be notified. Students are scheduled for either fall, winter, or spring quarter of the following year on the basis of information given on the preliminary application. A final, detailed, application blank must be filed prior to the quarter the student is scheduled for student teaching. A student scheduled to do student teaching during the fall or winter quarter should file his final application during the first two weeks of the preceding spring quarter. A student scheduled for student teaching during the spring quarter should file his final application during the first two weeks of the preceding fall quarter.

Application for student teaching by in-service teachers for the summer sessions should be made not later than January 1. Application blanks may be secured from the office of the chairman of Student Teaching.

Student Teaching Prerequisites

1. Preliminary application should be made to the chairman of Student Teaching during the winter quarter of the academic year prior to graduation.

2. A final, detailed application form must be completed two quarters prior to the student teaching assignment.

3. The student must have 128 hours of credit with a 3.25 grade point average before beginning work in student teaching.

4. The student is responsible for having transcripts of credit earned at colleges or universities other than Southern Illinois University on file in the office of the chairman of Student Teaching.

5. The student in secondary education must have at least 16 hours of credit in each subject which he proposes to teach. The areas of concentration are listed under Secondary Education elsewhere in the catalog.

6. Each student must have at least 12 hours in professional education courses prior to doing student teaching. One preparing to teach in junior or senior high school must have had educational or adolescent psychology, high school methods, or a special methods course in his public school teaching subject area. One preparing to teach in the elementary school must have had educational or child psychology, reading methods, and elementary methods. An early-childhood education concentration must have had educational or child psychology, reading methods, and kindergarten-primary methods. He must also be approved in class piano and must have had typewriting and duplicating courses or passed a proficiency exam in both.

7. The student must have established at least one quarter of residence credit at Southern Illinois University, earning a minimum of 16 hours of credit, prior to any student teaching assignment.

8. Students must have academic training in a public school teaching area which meets the approval of the respective departmental chairman.

9. Student teachers must have a clearance from Health Service, after taking a tuberculin test.

10. Admittance to the student teaching program will be made with respect to the above mentioned prerequisites at the close of the second quarter preceding the student teaching term.

Technical and Industrial Education

Technical and industrial education is an instructional activity concerned with the roles, interactions, and relationships in a variety of industrial and technological areas. The programs are designed to prepare persons for teaching or providing leadership in one of the industrial or technical education fields. The technical and industrial education programs at Southern Illinois University acquaint students with the role of industry and technology in the programs of industry, schools, and other institutions.

Industrial arts teaching encompasses a broad area of study concerned with the provision of experience with and knowledge of machines, tools, materials, and processes used in industry. It includes such things as communications, transportation, manufacturing and construction. Persons following this program are prepared to teach industrial arts subjects in the elementary, junior and senior high schools.

The trades and industries program provides specialized instruction in technical-industrial occupations such as automotive, drafting, machine-tool, and electronics offered in senior high schools, trade schools and other vocational training programs.

The manual arts therapist uses medically-prescribed programs of activity, involving industrial materials and tools, in physical and mental rehabilitation of patients in hospitals, sheltered workshops and rehabilitation centers.

Technical teaching is a program which prepares persons for teaching in areas of technical education in the junior colleges and technical institutes. It involves instructing youth and adults in highly skilled occupations requiring knowledge of such areas as science, mathematics, mechanical design, electronics, or power.

Educational specialists are prepared to work with all levels of school youth and adult programs relating to industry. Those who gain experience and continue graduate work receive special instruction at college and university levels to prepare for professional teaching occupations. Students who have undergraduate backgrounds in engineering technology or the equivalent may pursue a master's degree in technical education.

Bachelor of Science Degree, SCHOOL OF TECHNOLOGY

<i>General Studies Requirements</i> (See Chapter 3.)	90
<i>Requirements for Concentration in Technical and Industrial Education</i>	108
GSA 358-6	(6)

Guidance 305	4
Mathematics 111-10	(9) + 1
Secondary Education 310, 352-12 or 16 or Technical and Industrial Education 435-12 ¹ or 425	20
Technology 100, 101-6, 300c	11
Technical and Industrial Education 408, 491	6
Optional Groupings	66
<i>Industrial Arts Teaching:</i> 380-9, Industrial Technology 300a, 306a, 309a, 312a, 320a, 327a, 343a, elective teach- ing areas-34	
<i>Trades and Industries Teaching:</i> 319-12 to 24, 494, 495, 496, Technology 259 or concentration specialty-45	
<i>Technical Teaching:</i> Technology 319, Engineering 222, con- centration specialty-40, related area-20	
<i>Manual Arts Therapy:</i> Industrial Technology 300a, 306a, 309a, 312a, 320a, 322a, 327a, 343a, Psychology 305, 307, 465, Health Education 334s, Physiology 300, 455, elec- tives-19.	
<i>Total</i>	198

Theater

Instruction and training in all phases of dramatic production for the stage and in basic techniques for dramatic production in television, radio, and motion pictures are provided.

Education for dramatic production entails (1) training and practice in acting, directing, and technical production (stage management, crew work, the planning and execution of costumes, lighting, and scenery); (2) understanding of the essential nature of theater art through study of theater esthetics, history, and criticism; (3) a survey of theater management practices; and (4) a knowledge of dramatic literature.

The courses are designed to achieve the following objectives: (1) to teach the theory and practice of play production; (2) to provide a foundation for graduate study, in dramatic production, theory, and history; (3) to provide basic professional training in all phases of dramatic production for stage, screen, radio, and television; (4) to provide the general college student with opportunities to participate on an extracurricular basis in a cooperative artistic enterprise, and with courses which will contribute to a broad liberal arts education; (5) to provide the student of general speech with training and experience in an important type of speech activity; (6) to provide campus, city, and area with live theater performances of the best plays, including children's plays and operas, of past and present; and (7) to permit students some degree of specialization in any one of five areas of dramatic production: acting and directing; scenic and costume design; playwriting and dramatic literature; theater history, theory, and esthetics; and children's theater and creative dramatics.

The Southern Players, under the supervision of the theater faculty, produce each school year five three-act plays, three plays for children, programs of original one-acts. Each fall the Touring Theater, a troupe

¹ Required only for concentration in manual arts therapy.

composed of students registered in 322 tours Southern Illinois for several weeks, performing daily a three-act play and a play for children. Each summer a resident stock company produces a five-production playbill in the air-conditioned University Theater.

Bachelor of Science Degree, SCHOOL OF COMMUNICATIONS

<i>General Studies Requirements</i> (See Chapter 3. Waive GSC-3.)	84
<i>Requirements for Concentration in Theater</i>	89
GSC 110-9, 200, 201, 203, 305, 340, 348, 354, 365 .. (12) + 24	
English 460-8	8
Theater 111-6, 203, 204, 207, 305, 311, 322-12, 402a, 414, 432, and other courses chosen according to the students desire to specialize in one of the five following areas: directing and act- ing; scenic and costume design; playwriting and dramatic literature; theater history and theory; Children's Theater and creative dramatics	48
Theater electives	9
<i>Electives</i>	19
<i>Total</i>	192

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>Requirements for Concentration in Theater</i>	78
GSC 201, 203, 354-6 (4) + 9	
English 460-8, 471-4	12
Theater 111a,b, or c, 204, 208-3, 308-3, 311, 314, 402a, 403, 438	33
Theater electives	24

Secondary Concentration

The required courses are 111-6, 204, 207, 305, 311, 402a, for students in the School of Communications; GSC 203, Theater 111a,b, or c, 204, 208, or 308, 354-6, 402a, 438, for students in the College of Liberal Arts and Sciences.

Zoology

Students planning to concentrate in zoology should consult with the zoology faculty representatives.

A concentration in zoology is appropriate for those wishing to enter the following fields: fish and wildlife management, dentistry, medicine, veterinary medicine, or allied fields. These students should consult with the zoology adviser concerning their course of study.

Bachelor of Arts Degree, COLLEGE OF LIBERAL ARTS AND SCIENCES

<i>General Studies Requirements</i> (See Chapter 3. Waive GSA-3.)	84
<i>Requirements for Concentration in Zoology</i>	60
GSA 201-8 (4 hours count toward the 48-hour concentra- tion)	(8)
GSD FL (Recommended French, German, or Russian) ..	(9)
Mathematics 111-10	10
Chemistry 111b,c (4) + 6	
Zoology 102, 103, 202, 300, 310, 382-1, 401	31

Zoology electives to complete 48 hours, which may include GSA 312, 313, 315	13
<i>Electives</i>	48
Recommended: three additional quarters of the foreign language elected, three quarters of botany, two of physics, one of physiology, one of microbiology, and organic chemistry	
<i>Total</i>	192

One who desires a concentration in zoology is expected to register consecutively in Zoology 102, 103, 202, and 300.

Secondary Concentration

A secondary concentration in zoology consists of at least 24 hours, including GSA 201-8 (which contributes only 4 hours); Zoology 102, 103; and at least one laboratory course numbered above 199. GSA 312, 313, 314, 315 may be counted toward the 24-hour minimum.

6 / Degrees

SOUTHERN ILLINOIS UNIVERSITY grants the following undergraduate degrees.

Bachelor of Arts
Bachelor of Science
Bachelor of Music

Bachelor of Music Education

Associate in Art
Associate in Business
Associate in Technology

Graduation

Every degree candidate *should* signify his intention to graduate by making application for graduation no later than the first week of his last quarter in attendance before the desired graduation date. Therefore, a person desiring to graduate in the June commencement who will be in school during the spring quarter should make application for graduation during the first week of the spring quarter. If he finishes his work during the preceding winter quarter, he should apply during the first week of the winter quarter. Similar arrangements should be followed by students completing their work during the fall quarter. The application forms are available in the Registrar's Office.

Every candidate for a degree *must* file written application with the Registrar's office not less than five weeks before the date on which the degree is to be granted. At the time of application the student must pay his graduation fee and order his cap and gown through the University Bookstore and should register with the Placement Service. A student must have a 3.00 grade point average before his application for a degree may be accepted.

In addition to the satisfying of all necessary academic requirements each candidate for a degree must make certain that he has no outstanding financial obligation with the University. Otherwise, his graduation clearance will be held up.

Students must attend Commencement exercises to receive their diplomas, unless in advance they obtain permission to be graduated *in absentia*.

Associate Degrees

Each candidate for an associate degree must complete a minimum of 96 hours of credit in approved courses. Each student must maintain a C average. The degree granting unit for the associate degree is the Division of Technical and Adult Education. For information concerning this degree, refer to the Division of Technical and Adult Education bulletin.

Bachelor's Degrees

Every bachelor's degree candidate must meet the University's requirements and the requirements of his academic unit.

Each candidate for the degree must complete a minimum of 192 hours of credit in approved courses. At least 64 must be in senior (i.e., 300 or 400) college courses. Each student must have a *C* average, and grades not lower than *C* in subjects aggregating at least three-fourths of the work. A *C* average is required in the area of concentration.¹ These averages are required for credit made at this University as well as for the total record. To receive a bachelor's degree from Southern Illinois University a student must present either a total of three years work (144 hours) earned at Southern Illinois University or by completing the last year in residence. The last year shall be considered as 48 quarter hours of which not fewer than 36 shall be of senior college level. Twelve of the 48 may be earned in extension at Southern Illinois University.

A student who received his first bachelor's degree from Southern Illinois University and who desires a second bachelor's degree must complete 45 hours in addition to those required for the first degree and must fulfill the requirements for the second degree. Of these 45 hours, a minimum of 15 must be taken in residence at the University, and a maximum of 15 may be acquired in extension and/or correspondence courses. At least 30 hours must be in senior college courses. If a student received his first bachelor's degree from another university, 48 hours are required to fulfill the residence requirement for the second bachelor's degree, two-thirds of which must be in senior college courses.

The state of Illinois requires that American patriotism and the principles of representative government, as enunciated in the American Declaration of Independence, the Constitution of the United States of America, and the Constitution of the State of Illinois, and the proper use and display of the American flag shall be taught in all public schools and other educational institutions which are maintained in whole or in part by public funds, and that no student shall receive a certificate of graduation without passing a satisfactory examination upon such subjects. Government 231, 300, History 330, GSB 203a, and 300a offer such instruction.

Students preparing to teach must satisfy the certification requirements of the state in which they plan to teach. Illinois requirements are described on pages 49-50, and 83-84 of this catalog. Most students who plan to teach in the public schools register in the College of Education.

University Convocations Requirement

All students entering the University as beginning freshmen must satisfactorily complete three quarters of University Convocation during their first year, or in any case prior to graduation. Exceptions are (1) students who transfer from other institutions and re-entering students who started collegiate work in the Vocational-Technical Institute, (2) students who are more than twenty-five years of age at the time of first registration at Southern Illinois University, (3) students who carry fewer than 12 hours each quarter during their first eight quarters, and (4) students enrolled in the Vocational-Technical Institute.

Preprofessional Programs

Preprofessional students may, subject to certain conditions, obtain a bachelor's degree after three years' work (144 quarter hours) at Southern Illinois University and one or more years' work in a professional school.

¹ The areas of concentration are described in chapter 5.

During their three years of residence at Southern Illinois University they need to have completed all requirements other than elective hours for the bachelor's degree which they are seeking.

In some cases the completion of concentration requirements is possible by their taking certain courses at the professional school, but this is permitted only upon the prior approval of the appropriate divisional head. Also, there needs to be completion of at least one year of professional work with acceptable grades in a Class A medical school, a Class A dental school, a Class A veterinary school, an approved law school, an accredited medical technology school or hospital plan approved by the University. In all cases, all University graduation requirements must be met. It is advisable for a student interested in this program to make his decision to seek a bachelor's degree before entering the professional school so that any questions may be clarified at an early date. Preprofessional training is offered in the areas of medical technology, medicine, dentistry, and veterinary science.

Students working toward the Bachelor of Science degree in agriculture may attend the Edwardsville Campus their freshman year and transfer to the Carbondale Campus for the completion of the degree. In preparing for one of the agriculture professions, the student should follow closely the appropriate course of study as suggested in this catalog.

Students working toward a Bachelor of Science degree in home economics may attend the Edwardsville Campus their freshman and sophomore years and transfer to the Carbondale Campus for the completion of the degree. In preparing for this degree, the student should follow closely the appropriate course of study in this catalog.

Advanced Degrees

For information concerning master's degrees or the Doctor of Philosophy degree, refer to the Graduate School Catalog or direct inquiries to the dean, Graduate School, Southern Illinois University, Carbondale, Illinois 62901.

7/ Student and Area Services

SOUTHERN ILLINOIS UNIVERSITY recognizes the importance of providing students every opportunity to benefit in the fullest manner from their college experiences. The University is one of the first in the nation to pioneer in relating administratively the operations of student services and area services. A goal is to assist students in their participating in the activities of the regions served—including international areas. At the same time the University hopes to assist residents of the community, region, and state to understand better the purposes of the University and the contributions of young men and women.

Student Services

The University is concerned with an integrated approach to student needs and problems in intellectual, social, spiritual, and physical areas. Students may learn about and be referred to specialized services throughout the University by publications describing the services and by the personnel in units which are concerned with students.

Those functions of Student and Area Services relating directly to students include the student services administered by the Dean of Students (e.g., student housing, counseling, testing, and student activities), the University Placement Services, the University Health Services, the Student Work and Financial Assistance Program, the International Student Services of the International Services Division, the University Information Services, the University Broadcasting Services, the University Alumni Services, the Community Development Services, and the Public Administration and Metropolitan Affairs program.

Office of the Dean of Students

The Dean of Students on each campus coordinates the student services offered by the units within the Student Affairs Division. The deans and their staffs work closely with other University offices, with students, and with faculty in planning and implementing an integrated program of activities and services. The Office of the Dean of Students provides information about the University and its services, and lends assistance to students who request it.

Counseling and Testing

The Counseling and Testing Center is staffed with professional counselors who are qualified to discuss freely any problem or plan—academic, personal, or vocational—that may concern the student. Counseling is designed to aid the student in arriving at a realistic solution to his problem by providing a permissive setting in which he may freely verbalize his thoughts and feelings and, in turn, gain insights for greater understanding. The counselor may use tests as an aid in helping the student evaluate his strengths and limitations. These may include measures of interest, aptitude, personality, and achievement.

Most of the students who seek help from the Counseling and Testing Center refer themselves. However, referrals are received from the faculty and from agencies throughout the University. Students may make appointments by telephone. Services are free.

The American College Testing Program is administered on both the Carbondale and Edwardsville Campuses. In addition to the extensive individual testing conducted in conjunction with counseling, the Counseling and Testing Center administers testing programs for selection, placement, and research purposes.

An on-going program of research is carried out by the staff of the Counseling and Testing Center in student attitudes, aptitude, achievement, and background; the college environment; and other areas related to the total educational process. Staff members serve as consultants to other faculty members in educational and institutional research.

Student Housing

Because of the relationship between the student's living environment and his progress towards attainment of his educational goals, Southern Illinois University provides and continually improves on-campus housing for its students and seeks continually to influence both the availability and quality of off-campus housing.

BASIC STUDENT HOUSING POLICY

Because of concern for and interest in the housing of students, the Board of Trustees of Southern Illinois University established, in 1963, basic policy on student housing. At its meeting in April, 1965, the Board of Trustees amended its 1963 policy and passed a resolution which established the current basic policy on student housing as follows.

Single undergraduate students not residing with their parents or guardians will be permitted to reside only in those accommodations which have been and which continue to be classified by the Administration as Accepted Living Centers. Any single undergraduate student who resides in accommodations not designated as an Accepted Living Center shall be subject to disciplinary action. The Administration vigorously encourages that all accommodations used by graduate students and married undergraduates meet the same minimal standards.

The qualifications necessary for a living unit to be classified as an Accepted Living Center encompass due consideration for safety, sanitation, health and recreation, supervision, and the creation of an environment conducive to good study conditions. In addition, the living unit must be limited to students of Southern Illinois University and available to all students of the University regardless of race, color, religion, or national origin.

The Administration reviews annually the Housing Policies and Standards and makes appropriate recommendations to the Board of Trustees for upgrading living conditions for students.

UNIVERSITY HOUSING, CARBONDALE CAMPUS

Applications for University housing for students for any academic year may be filed after September 1 of the preceding year. Assignments of space and contracts for housing may be made on the basis of the date of original application for housing if the student has been admitted to the University.

Present nine-month rates for University housing for single students (room and board) is \$876. Family rates are dependent on the type of facility available.

The rates charged by the University for the various housing units are established on the basis of current costs, and every effort is made to keep rates at the lowest possible level. All rates for University housing are subject to change from time to time depending upon the prevailing cost structure and approval by the Board of Trustees.

UNIVERSITY HOUSING, EDWARDSVILLE CAMPUS

The Edwardsville Campus is designed for commuters, and approximately 85–90 percent of the students reside at home while attending the University. At the present time, there are no residence halls on the Edwardsville Campus.

OFF-CAMPUS HOUSING

In order for living accommodations to be classified as Accepted Living Centers, facilities must meet certain safety, sanitation, health, recreation, and supervisory standards. The creation of an environment which is conducive to good study conditions is always of primary consideration.

Owners of off-campus housing facilities use the University's contract form for student rental housing. Each student contract has to be signed by the owner or his legal representative, by the student renter, and by an appropriate staff member of the office of the Assistant Dean for Off-Campus Housing.

Staff members are available to advise students who seek off-campus accommodations. Experience has indicated that attempting to obtain off-campus facilities by mail is generally unsatisfactory. Therefore, prospective students are urged to visit the campus and personally seek desirable living accommodations.

Detailed information concerning housing may be found in "Student Housing Policies and Standards," which may be obtained at the Office of the Dean of Students.

Student Activities

The staff members of the Student Activities Office are available to all campus groups and individuals in planning, conducting, and evaluating activities and programs.

Besides honorary organizations which stimulate and recognize academic achievements, other groups and organizations exist to meet the educational, religious, social, recreational, political, and other special interests of the student.

Through the use of the Student Activities funds, certain all-campus groups are able to initiate and plan a wide variety of programs for the entire campus community.

Through the establishment and recognition of such organizations and programs at Southern Illinois University, students are able to become involved with the academic community. Participation in any group or organization is open to all students.

Student Guidebook

Specific information and current policies concerning housing, motor vehicle regulation, student activities, student code, and general matters

are found in the *Student Guidebook*, which is distributed to new students upon admission to the University. All students should be cognizant of University requirements and regulations and may obtain copies of the *Student Guidebook* from Central Publications or from the Office of the Dean of Students.

Office of Student Work and Financial Assistance

Southern Illinois University has an excellent program whereby a student may combine student work with financial assistance to defray a large part of his educational expenses. Student job diversity extends from unskilled entry jobs to those jobs requiring college training. Employment opportunities for students exist in every unit of the University.

The Student Work Program provides part-time employment and work experience which relates, if possible, to the student's academic programs. The kind of training and length of the program are determined by the employing unit in cooperation with the Office of Student Work and Financial Assistance.

Undergraduates employed on campus are paid from \$1.00 to \$1.75 per hour, based upon off-campus experience and the number of years of satisfactory service to the University. Graduate students receive \$1.15 to \$2.00 per hour.

Undergraduates must be enrolled in at least 12 hours to qualify for part-time student work on campus during any quarter except the summer quarter, when students may work and be enrolled in a reduced number of class hours.

In addition to student work, scholarships, grants, loans, and other aids are available to assist academically capable, financially needy students. As a part of the award program, the Board of Trustees has established tuition awards known as Southern Illinois University Scholarship and Activity Awards. To apply for awards, entering freshmen must have ranked in the upper half of their graduating class and have achieved a minimum comprehensive high school average of C; enrolled students must have a minimum average of C for all college work. For scholarships available to upperclassmen, a minimum average of C is required for all college work. For some scholarships, higher averages are required.

The limitations of such forms of assistance make it inadvisable for an undergraduate to expect to meet all University expenses from such sources. The University may assist in making up the difference between college costs and the student's resources through scholarships, awards, and loans.

Students desiring to apply for financial assistance must be officially admitted to the University and should request an application for financial assistance from the Student Work and Financial Assistance Office. In general, students should apply for assistance between January 1 and March 15 prior to the September when assistance is needed.

Health Services

The Health Services Division provides medical services at all the major instructional centers of the University. Its purpose is to render service to the students, faculty, and staff within the limits imposed by the size and professional status of the staff, by legal obligations, and by the available facilities.

A physical examination, preferably performed by the family physician,

is required of all students before attending classes on a full-time basis. A simplified form is furnished the student for this purpose; it should be mailed or brought to the Health Service on completion. From this record, decisions may be made relative to special considerations for physical disabilities, need for individualized physical education courses, and treatment of illnesses while the student is enrolled.

Detailed information about the service provided and the voluntary health insurance program available to students at special rates may be obtained through a brochure available at the Health Service.

Placement Services

The University Placement Services are provided for the benefit of students, graduates, and others who have been attending the University, and who desire to find employment. It also serves employers by helping them locate personnel. Services are free to candidates seeking positions, as well as to employers.

Each student is requested to register with the Placement Service during the fall quarter of his senior year. Credentials are sent to prospective employers at the request of either the candidate or the employer.

As a means of helping students and graduates obtain permanent employment, a library of employer information is maintained. Company representatives visit the campuses throughout the year, and interviews are scheduled for students who have registered with Placement Services.

International Student Services

The office of International Student Services attends to the special needs of the student from abroad. Staff members with special qualifications have primary responsibility for assisting the student in matters of adjustment to the University and with matters of immigration, passport problems, contacts with sponsors (foundations, agencies, governments), and financial and personal problems. A special effort is made to integrate the students from abroad into the University and area life and, reciprocally, to help them become a living resource for American students to expand their horizons and interests.

Cooperative Clinical Services

The Cooperative Clinical Services Center is a coordinated center of services (on the Carbondale Campus only) open to students as well as children, adolescents, and adults. Persons may report directly to the center or write the manager for an appointment. Services include psychodiagnostic assessments, speech and hearing evaluations, assistance with reading and study skills, personal counseling, marriage counseling, rehabilitation counseling, vocational counseling, speech and hearing therapy, and physical therapy. Cooperating agencies include Reading Center, Department of Guidance and Educational Psychology, Department of Psychology, Department of Special Education, Department of Speech Pathology and Audiology, Rehabilitation Institute, Department of Sociology, Counseling and Testing Center, and Health Service.

Bursar

The Bursar's Office accepts payment of tuition, fees, and room charges. It also distributes checks for student employment. Limited check cashing services are provided to students. Students are encouraged to establish

checking accounts in local banks of the area to obtain the full services of a regular checking account.

Identification Cards and Certificates of Registration

Each student receives an identification card which bears his photograph and serves to identify him while he is enrolled at Southern Illinois University.

A certificate of registration, issued each quarter, certifies payment of the student activity fee. The identification card is used with the certificate of registration for the current quarter to identify students who have paid the student activity fee and are eligible to use University facilities.

The identification card and the certificate of registration are legal documents. A student who loans, borrows, or alters these cards is subject to disciplinary action; in addition, such action may be considered a criminal offense as well as an infraction of University regulations. It is important to obtain a new certificate of registration each quarter and *to carry both the identification card and the current certificate of registration at all times*. These cards are also used to borrow books from the University Libraries and to gain access to the University Center recreational facilities. They are used in the registration process at Carbondale.

Residence Regulations

Regulations defining the residence of students for purposes of registration in Southern Illinois University are as follows:

1. Evidence showing the residence of every applicant for admission to the University must be submitted to the Registrar at the time of application for admission, and resident or nonresident fees shall be assessed on the basis of evidence appearing in the Registrar's records.

2. In all cases where the records indicate that the student's home is outside the state of Illinois, the nonresident fee shall be assessed. A student who takes exception to the ruling may file a claim for a refund, but this must be submitted to the Registrar within 10 days of the opening date of the quarter for which the charge was made.

3. In the case of a student who is a minor, the residence of the parent, or if the student has no parent, the guardian of this person, shall govern unless there is proven to have been complete emancipation of the minor from his parents or guardian and he has established residence in the state of Illinois.

4. Any student, adult or minor, whose parents have established a bona fide residence in the state of Illinois will be regarded as a resident for registration purposes; except that an adult student who has established a residence on his own account outside of the state must conform to the terms set forth in regulation 6 to be classified as a resident.

5. A wife is classified as a resident for registration purposes if her husband is a bona fide resident of the state of Illinois preceding and at the time of her registration.

6. An adult student, whose parents are deceased or whose parents reside outside the state, to be considered a resident of Illinois for purposes of registration must be a bona fide resident of the state for three months preceding the beginning of any quarter for which he registers at the University and must present evidence that he is self-sustaining and not under parental control.

7. An adult alien who holds valid immigration papers and is in the United States under an immigrant-type visa may qualify as a resident of the state for purposes of registration in the University if he has lived within the state for at least a period of twelve months next preceding the beginning of any quarter for which he registers at the University, subject to the provisions of rules 4 and 6.

8. Several factors will be considered in the determination of each individual case. Among the factors to be considered will be (a) location of draft board registration, (b) voting address, if any, (c) the degree of self-support of the student, (d) location of summer or vacation employment.

9. All cases of appeal shall first be referred to the Legal Counsel of the University. An appeal from the Legal Counsel shall be in accordance with University statutes.

Note: In the above regulations an adult student is considered to be a male at least 21 years of age or a female at least 18 years of age.

8 / Course Descriptions

HERE ARE DESCRIBED all of the courses offered by the University for credit toward a bachelor's, master's or doctor's degree. (Associate degree courses and certificate courses offered by the Vocational-Technical Institute are described in the Division of Technical and Adult Education bulletin.) Courses are listed *numerically* within each subject-matter area. Areas are listed below in the order of their appearance on the following pages.

General Studies Area A	Government
General Studies Area B	Guidance and Educational Psychology
General Studies Area C	Health Education
General Studies Area D	Higher Education
General Studies Area E	History
Accounting	Home and Family
Aerospace Studies	Home Economics
Agricultural Industries	Home Economics Education
Animal Industries	Industrial Technology
Anthropology	Instructional Materials
Applied Science	Journalism
Art	Management
Botany	Marketing
Chemistry	Mathematics
Clothing and Textiles	Microbiology
Design	Music
Economics	Philosophy
Education Administration	Physical Education—Men
Elementary Education	Physical Education—Women
Engineering	Physics
Engineering Technology	Physiology
English	Plan "A"
Finance	Plant Industries
Food and Nutrition	Printing and Photography
Foreign Languages	Psychology
Chinese	Radio-Television
French	Recreation and Outdoor Education
German	Religious Studies
Greek	Secondary Education
Italian	Secretarial and Business Education
Latin	Sociology
Portuguese	Special Education
Russian	Speech
Spanish	Speech Pathology and Audiology
Romance Philology	Technical and Industrial Education
Forestry	Technology
Freshman Convocation	Theater
Freshman Honors Seminar	University Convocation
Geography	Zoology
Geology	

The first entry for each course is a three-digit numeral which, together with the subject area, serves to identify the course. The first digit indicates that the course is for freshmen, sophomores, juniors, seniors, or

graduate students only, depending on whether the digit is 1, 2, 3, 4, or 5, respectively.

Following the identification number are a dash and another number, which indicates the maximum credit allowed for the course. The maximum may be variable, such as Art 393-4 to 12. Some courses do not terminate at the end of one quarter, as evidenced by two or more numerals in parentheses indicating the credit allowed for each quarter of participation in the course, such as GSC 110-9 (3,3,3).

Next is the title, followed by a description of the course. If certain requirements must be satisfied before enrollment in a course, they are listed as prerequisites.

Not all of the courses described here are offered every quarter or even every year. To find out when and where a course is to be offered, consult the Schedule of Classes, which may be obtained from Central Publications, Southern Illinois University, Carbondale, Illinois 62901. When requesting a schedule, please specify *campus* (Carbondale or Edwardsville) and *quarter* (fall, winter, spring, or summer).

Man's Physical Environment and Biological Inheritance (GSA)

101-8 (4,4) Introduction to Physical Science. The aim of this course given jointly by the departments of Chemistry and Physics, is to introduce the student to a few of the basic concepts underlying the contemporary scientific view of nature, such as the understanding of energy properties, and behavior of matter.

110-8 (4-4) The Earth and Its Environment. A study of the Earth, its major domains, and its space environment: student investigation of earth substances, processes and utilization of energy. An investigative approach is used for study of the observational and measurement techniques used by the earth scientist. Lecture, laboratory, and individual study.

201-8 (4,4) Introductory Biology. Lecture and laboratory on the fundamentals of biological science: the cell and protoplasm, development, inheritance, structure and function of animals and plants, evolution and ecology. Must be taken in a,b, sequence. Prerequisite: GSA first level or Chemistry 110 or 111.

301-4 Principles of Physiology. A comprehensive introductory analysis of the functional machinery of the human body.

302-3 Psychobiological Foundations of Behavior. A study of the behavioral characteristics of living organisms, especially those of mammals and man.

303-3 Ferns, Trees, and Wild Flowers: The Pleasure of Recognition. Field studies of local plants.

310-3 The Development of Atomic Energy. A survey of atomic theory from early Greek thought to the present. These ideas are considered in the context of their times rather than as isolated events.

312-3 Conservation of Natural Resources. A study of man's use and misuse of natural environment.

313-3 Evolution. Principles and processes of the evolution of living things, including man. Prerequisite: one year of biology.

314-3 Man's Genetic Heritage. Principles of heredity as related to man, with emphasis on the effects of environment on his biological inheritance.

315-3 History of Biology. The inter-relationships between the development of biological knowledge and the history of mankind.

321-3 Introduction to Paleontology. A study of the record of fossil plants and animals and the application of biological and geological principles to the development of theories regarding their origin, evolution, distribution, and extinction.

322-3 Introduction to Rocks and Minerals. The course is specifically designed to acquaint the nonprofessional with the origin, distribution, character, and value of the common minerals and rocks in the earth's crust.

330-3 Weather. A study of weather elements basic to understanding the various atmospheric happenings, with application to agriculture, industry, recreational

resources, etc. Students may take only 330 or 331 for General Studies credit.

331-3 Climate. Description and interpretation of climatic regions and their influence on human activity. Students may take only 330 or 331 for General Studies Credit.

340-3 Ecology. A consideration of ecological principles with emphasis upon examples relating to vegetation.

345-3 Economic Botany. The study of man's dependence upon plants, domestication, production, consumption, crop ecology, possible new uses of plants.

358-6 (3,3) Analysis of Physical Systems. Quantitative applications of the principles of classical and modern physics with emphasis on the application of the laws of heat, wave motion, quantum theory, and atomic physics. Prerequisites: GSA first level, Mathematics 111a,b. Not open to students who have taken college or university physics.

361-3 Physics of Music and Acoustics. Nature, propagation, sources and receptors of sound; acoustic phenomena; physics of musical instruments; mathematics of music; ears and hearing; physiology and psychology; transmission, storage, and reproduction.

363-6 (3,3) Philosophy of Science. (a) The logic of scientific explanation illustrated by analysis of physical concepts and theories. (b) The logic of explanation in the biological and behavioral sciences and their implications for the individual and society. May be taken in a,b or b,a sequences, but a,b is preferable.

Man's Social Inheritance and Social Responsibilities (GSB)

101-8 (4,4) Survey of Western Tradition. (b) A general survey of the political, economic, social, and intellectual development of Western Europe from the Middle Ages through the French Revolution. (c) A general survey of the political, economic, social, and intellectual development of Western Europe since the French Revolution. Must be taken in sequence.

102-8 (4,4) Man and His World. Anthropology: the nature of man; his behavior as the only culture-bearing animal. Geography: description of the content and spatial patterns of the contemporary world.

201-8 (4,4) Behavior and Society. An examination of the variables related to the acquisition of human behavior and social interaction in human institutions.

211-8 (4,4) Political Economy. The functioning of the economy, the theory, organization, and operation of government, and the making of public policy in the economic sphere.

300-9 (3,3,3) History of the United States. A general survey of the political, social, and economic development of the United States. (a) 1492 to 1815, (b) 1815 to 1900, (c) 1900 to the present.

301-3 Law: Comparative Legal Systems. A comparison of the legal institutions and laws in the United States, Western Europe, South America, and Eastern nations.

302-3 Law: Civil Rights. The law protecting the civil liberties and rights of people.

303-3 International Relations. A study of world politics. The causes of international conflict and the conditions of peace.

304-3 Law: History and Philosophy. A study of the evolution and development of law beginning with the ancient and archaic periods. Greek law, Roman law, and English and American law. In addition, the historical development of legal philosophy is reviewed.

311-3 Economic Development of the United States. Emphasizes the underlying trends and forces of change that have led to our present economic structure, level of performance, and world position. Prerequisite: 211-8.

312-3 Comparative Economic Systems. A comparative study of the goals, structure, and operation of the major economic systems, such as capitalism, socialism, communism, and fascism. Emphasis upon basic systems of organization and control, and upon mixed economies, rather than upon the traditional compartments within which economic systems are sometimes put.

313-3 Economics of War and Peace. A study of relations between wartime and peacetime economies with specific reference to government controls, impact of military expenditures in "hot" and "cold" wars, and the reallocation of resources.

314-3 Economic Analysis of the Agricultural Policies of the United States. Emphasis on the underlying economic bases of agricultural policies and the effects of such policies on farmers, middlemen, and consumers.

320-6 Modern Britain. History, economics, government, and sociology of contemporary Britain (summer only, abroad).

321-3 Socialization of the Individual. A study of the emergent social process in which the native capacities of the infant are shaped and developed through interaction with significant others during infancy and childhood.

323-3 East and West in the 20th Century—Origins and Prospects. Study of the development since the late 19th century of basic internal forces such as industrialization, nationalism, socialism, and fascism in the U.S., Europe, and Asia, and the manner in which these forces have led to both conflict and cooperation between these geographical areas.

325-3 Race and Minority Relations. An analytical study of the status of racial, ethnic, and religious minorities in the United States.

331-3 The American Educational Systems. A comprehensive study of the nature and purpose of education in the United States and of how our schools are organized, financed, and conducted.

***333-3 Seminar in Problems of War and Peace.** Interdisciplinary topics in the general area of war and peace.

339-3 Alienation and Mass Society.

341-3 Marriage. An examination of marriage in various societies with an emphasis on the origins, changes, and present status of dating, courtship and marriage in the United States.

343-3 Geographical Basis of International Conflicts. Examination of geographical factors of world political relations and conflicts during the inter-war and post-war periods.

345-3 Introduction to American Foreign Policy. An investigation of the means by which American foreign policy is formulated and executed and an analysis of the most significant challenges confronting America abroad.

354-3 Industrial Economic Geography. Geographic resources relationship to the economic life of our nation, distribution of resources, industrial production, and the transportation of industrial products.

361-3 Fundamentals of Decision Making. A study of factors and methods involved in selecting the most economical and feasible plan in industrial engineering ventures considering both the business and technical aspects involved.

369-3 The Contemporary Far East. A study of relations between wartime and peacetime economies with specific references to government controls, impact of military expenditures in "hot" and "cold" wars, and the re-allocation of resources.

380-6 (3,3) East Europe: Cultural Heritage and Present Institutions. (a) Cultural Heritage, (b) Present Institutions. An introduction to the European area east of the iron curtain with attention evenly divided among Russia, the Balkans, and Northern East Europe.

385-3 Contemporary Political Isms. An advanced survey of recent political systems: Nationalism, Socialism, Communism, Liberal Democracy, Christian Socialism, Fascism.

390-3 Introduction to Comparative Government. A comparative survey of the organization and operation of politics in modern states.

392-3 Introduction to Latin American Government and Politics. A general introduction to Latin American government on the institutionalized political expression of Latin American civilization and culture. Does not require a reading knowledge of Spanish or Portuguese.

**Problems of Peace and War is a sequence of three separate courses, (303, 313, 343) any one of which leads to an integrated seminar (333).*

Man's Insights and Appreciations (GSC)

100-3 Music Understanding. Criteria for discriminative music listening as an asset to general culture. An examination of basic materials, techniques, and forms.

101-3 Art Appreciation. Study of significant achievements in art related to Western culture and contemporary life.

102-3 Problems of Moral Decision. An introduction to contemporary and peren-

nial problems of personal and social morality, and to methods proposed for their resolution by great thinkers of past and present.

103-3 World Literature for Composition. Reading in English, literary masterpieces of the Western world, to increase the student's competence in reading imaginative literature, to acquaint him with the great ideas and values of the best literature, and to train him to deal with literary materials in his writing. (Prerequisite, GSD, 102.)

110-9 (3,3,3) An Introduction to Western Humanities. A selection of great works expressing the aesthetic, moral, and religious values of Western man. Sets forth the critical vocabulary of six humanistic disciplines: art, music, philosophy, design, literature, and theater; provides some direct experience of each one; and calls attention to interrelations among the disciplines and between the humanities and other aspects of Western culture. Must be taken in a,b,c sequence.

200-4 The Oral Interpretation of Literature. Students participate in a dynamic analysis of literature stressing the creative role of the oral interpreter. Emphasis is on individual problems in understanding and communicating significant literary works.

201-3 Introduction to Drama. Not a history of the drama. The class will read about a dozen plays, modern and ancient, and consider how various dramatic conventions and devices are used to give form and meaning to human experience.

202-3 Introduction to Poetry. A variety of poems, from the simpler to the more complex, are read and discussed. Emphasis is upon enjoyment and upon heightened insight into human experience. Devices of artistic form, such as imagery and meter, are discussed as they are involved with the substance they express, human actions, feelings, and attitudes, including the poet's satisfaction in giving artistic form to his material.

203-3 Drama and the Arts of the Theater. The study of drama as a literary type; the relationship with the theater audience, the role of the theater in Western culture and its relation to other creative arts.

204-4 Meaning in the Visual Arts. A historically-oriented conception of the relationship between art and civilization which seeps through the examination of relevant examples of the visual arts to develop awareness of the great complexities of artistic motivation, the development of art styles, and the interaction between the artist and society.

205-4 The Contemporary Environment. A lecture-laboratory course designed to create a picture plane whereon a student may see some principles underlying architecture, visual communication, and other products of his physical and cultural environment.

206-4 Foundation of Music. Emphasis on the historical sequence of musical development from primitive ages through the contemporary scene. An introduction to the materials of music, including application of basic skills to keyboard performance, is provided in studio sections. Two hours of lecture, one hour of studio each week.

207-3 Philosophy of the Beautiful. A study of the structure and importance of the beautiful in nature, society, personality, and the arts.

208-4 Logic and Meaning. A critical study of expressive, informative, and other modes of discourse, with emphasis on their roles in rational process.

209-4 Modern Literature: Form and Idea. Designed to give the student an interest in and an understanding of the forms, themes, and values of modern American, British, and Continental literature.

210-3 Introduction to Fiction. A study of the chief techniques of fiction and of some of the acceptable criteria for judging fiction. Readings in some of the masterpieces among American and European short story and novel writers.

211-9 (3,3,3) An Introduction to Oriental Humanities. The literature, music, drama, visual art, and definitive cultural motifs of three great Asian traditions: (a) focuses on India; (b) on China; and (c) on Japan. May be taken in any order.

305-3 Contemporary French Drama. Study of French contemporary drama since 1930, to be read in translation, with emphasis on the piece a these, the Theatre libre, symbolist drama, and the drama of modern social problems.

307-3 Early Islamic Culture and Civilization. An historical study of Islamic heritage including religion, philosophy, literature and the arts.

310-3 Religious Foundations of Western Civilization. Examination of the his-

- torical backgrounds and contemporary expressions of Jewish, Catholic, and Protestant thought.
- 311-3 Philosophies and Religions of India.** Historical and comparative study of Hindu, Jain, and early Buddhist thought and practice.
- 312-3 Philosophies and Religions of the Far East.** Historical study of the religious and secular thought of China and Japan; Confucianism, Taoism, and the varieties of Mayhayana Buddhism.
- 317-3 Recent American Literature.**
- 318-3 Modern British Literature.** Contemporary British Fiction and Drama (Summer only—Oxford program abroad).
- 320-3 Greek Literature in Translation.** A study of the masterpieces of Greek literature in translation.
- 330-3 Classical Mythology.** Study of the classical myths and their literary value.
- 331-3 Latin Literature in Translation.** Discussion of Latin literary works and their influence on later literature.
- 332-3 Classical Drama.** Study of selected plays in English translation from Aeschylus, Menander, Plautus, Terence, and Seneca. Origins, development, and influence of Greek and Roman tragedy and comedy. Study of Aristotle's *Poetics*.
- 340-3 Modern Art A: The Art of the 19th Century.** The principal movements of the 19th century: neo-classicism, romanticism, realism, impressionism, and post-impressionism. The styles of David, Ingres, Delacroix, Corot, Coubert, Manet, Degas, Monet, Renoir, Seurat, Van Gogh, and Gauguin receive emphasis.
- 341-3 Modern Art B: Art of the Early 20th Century.** A study of modern art as manifest in Fauvism, cubism, and expressionism. Emphasis on the artistic development of Cezanne, Matisse, Rouault, Picasso, Braque, Gris, Leger, Kirchner, and Kandinsky.
- 342-3 Modern Art C: Art of the Mid 20th Century.** Abstraction, later German expressionism, the school of Paris, and surrealism. Special attention to the work of de Chirico, Klee, Beckman, Chagall, Kokashka, Soutine, and late Matisse, Picasso, Braque, and Leger.
- 345-9 (3,3,3) Masterpieces of World Literature.** A study of the representative works of the varying cultures and eras: (a) ancient, Greek and Roman worlds, (b) medieval, renaissance and eighteenth century, (c) Romantic, Victorian, and modern periods.
- 348-3 Photography as Communication and Art.** The development and significance of still photography, with emphasis on photography as an art and communications medium. Study of factors making for photographic excellence to provide a basis for evaluation and discrimination of photographic images.
- 349-3 The Cinema.** The cinema as a communicative and expressive medium. Study of film types. Showings of selected films.
- 351-6 (3,3) Masterpieces of the Novel.** A study of the representative continental, English, and American novels: (a) 18th and 19th centuries, (b) 20th century.
- 354-6 (3,3) History of the Theater.** A study of (a) primitive, Greek, medieval, and Italian Renaissance theater, (b) the theater since the Italian Renaissance.
- 357-9 (3,3,3) Music History and Literature.** Integrates the development of musical thought and literature from Greek and Roman periods through the Renaissance and continuing through the twentieth century. Prerequisite: 105c or consent of instructor.
- 363-6 (3,3) Philosophy of Science.** (a) The logic of scientific explanation illustrated by analysis of physical concepts and theories. (b) The logic of explanation in the biological and behavioral sciences and their implications for the individual and society. May be taken in either a,b or b,a sequence, but a,b is preferable.
- 365-3 Shakespeare.** The major works of William Shakespeare.
- 381-3 Greek Philosophy.** The thought of the pre-Socratics, Plato, and Aristotle.
- 382-3 Graeco-Roman and Medieval Philosophies.** Epicureanism, Stoicism, and medieval Christian thought.
- 383-3 Early Modern Philosophy.** Bacon, Hobbes, Descartes, Leibniz, Spinoza, and the British empiricists in the context of the scientific and general social outlook of the period.
- 386-3 Early American Philosophy.** From the colonial period to the Civil War.
- 387-3 Recent American Philosophy.** Thought of Howison, Royce, Peirce, James, Dewey, and others.

Organization and Communication of Ideas (GSD)

- 101-3 English Composition.** Basic rhetorical principles in expository writing.
- 102-3 English Composition.** Basic rhetorical principles in expository writing. Prerequisite: GSD 101.
- 103-3 Oral Communication of Ideas.** The basic principles and techniques of oral communication as applied to everyday speech activities.
- 106-0 Intermediate Algebra.**
- 108-9 (3,3,3) Fundamentals of Mathematics.** An introduction to mathematical concepts and reasoning presented at a level appropriate for university students who have had high school courses in intermediate algebra and plane geometry. Topics include the number system, college algebra, analytic geometry, probability and statistics. Must be taken in a,b,c sequence.
- 110-3 Economic and Business Statistics.** Elementary statistical concepts, including the nature of statistical methods, sampling, probability, frequency distributions, estimations and hypothesis. May be taken as part c of the 108 sequence by economics, business and agricultural economics students.
- 120-9 (3,3,3) Elementary Chinese.** Emphasis on development of reading skills. Must be taken in a,b,c sequence.
- 123-9 (3,3,3) Elementary French.** Open to students who have had no previous work in French. Must be taken in a,b,c sequence.
- 126-9 (3,3,3) Elementary German.** Open to students who have had no previous work in German. Must be taken in a,b,c sequence.
- 130-9 (3,3,3) Elementary Greek.** (a) Grammar is emphasized, (b,c) reading of a text, usually the New Testament. Must be taken in a,b,c sequence.
- 133-9 (3,3,3) Elementary Latin.** Open to students who have had no previous work in Latin. Must be taken in a,b,c sequence.
- 135-9 (3,3,3) Elementary Portuguese.**
- 136-9 (3,3,3) Elementary Russian.** No previous knowledge of Russian required. Must be taken in a,b,c sequence.
- 140-9 (3,3,3) Elementary Spanish.** Open to students who have had no previous work in Spanish. Must be taken in a,b,c sequence.
- 144-9 (3,3,3) Elementary Italian.** Open to students who have had no previous work in Italian. Must be taken in a,b,c sequence.

Notes pertaining to GSD 120 through 144:

1. Sections of conversation for 1 hour of credit are available with each of these languages, but on an elective basis.
2. Students having had high school language training should see the Department of Foreign Languages for placement.

Health and Physical Development (GSE)

Courses numbered 100-104 are for men; 110-114 are for women.

- 100-3 (1,1,1) Restricted Physical Education (Men).**
- 101-3 (1,1,1) Swimming (Men).** (a) Beginning swimming, (b) Intermediate swimming, (c) Diving.
- 102-1 Physical Fitness (Men).**
- 103-3 (1,1,1) Dance (Men).** (a) Square, (b) Folk, (c) Social.
- 104-(1 per activity) Individual and Team Activity. (Men).** (a) Archery, (b) Badminton, (c) Basketball, (d) Bowling, (e) Golf, (f) Soccer, (g) Speedball, (h) Tennis, (i) Volleyball, (j) Softball, (k) Horseback riding, (m) Fencing, (n) Cross country, (p) Ice Skating, (q) Fly and bait casting, (r) Stunts and tumbling, (s) Gymnastics, (t) Touch football, (u) Wrestling, (v) Personal defense, (w) Judo, (x) Handball.
- 110-3 (1,1,1) Restricted Physical Education (Women).**
- 111-3 (1,1,1) Swimming (Women).** (a) Beginning Swimming, (b) Intermediate Swimming, (c) Diving.
- 112-1 Exercise for Fitness (Women).**
- 113-5 (1,1,1,1,1) Dance (Women).** (a) Square, (b) Folk, (c) Social, (d) Beginning Contemporary, (e) Intermediate Contemporary.
- 114-(1 per activity) Individual and Team Activity (Women).** (a) Archery,

(b) Badminton, (c) Basketball, (d) Bowling, (e) Golf, (f) Soccer, (g) Speedball, (h) Tennis, (i) Volley Ball, (j) Softball, (k) Horseback riding, (m) Fencing, (n) Hockey, (p) Gymnastics and tumbling, (r) Track and field, (s) Intermediate Bowling, (t) Intermediate Tennis, (u) Intermediate Golf.
201-3 Healthful Living. Personal and community health. Presents scientific health information as a basis for helping the student develop wholesome health attitudes and practices.

Accounting

250-4 Accounting Fundamentals. A study of accounting principles covering the more prevalent types of business organizations. Usefulness of accounting reports and data rather than technical practice is stressed. Not open to students with a concentration in the School of Business or the Business Division.

251-12 (4,4,4) Accounting. Principles and practices in handling transactions in original recordings and books of account; trial balances, adjustments, and construction and presentation of financial statements for proprietorships, partnerships, and corporations. Third course in this sequence emphasizes management's uses of the product of the accounting function, through budgeting procedures, cost accounting, and other criteria for sound decision-making. Must be taken in a,b,c sequence. Prerequisite: sophomore standing.

309-2 Individual Income Tax. Preparation of income tax returns. Federal income tax law as applied to individuals. Not open to those with a concentration in accounting.

331-4 Tax Accounting. Study of accounting principles and procedures for meeting requirements of current laws and regulations which relate to federal income tax. Laboratory problems and preparation of tax returns with special emphasis on the individual taxpayer. Prerequisite: 251-12.

341-4 Cost Accounting. Interpretation and managerial implications of material, labor and overhead for job order, process and standard cost systems, cost-volume-profit relationships. Accounting for complex process production flows, joint and by-products, spoilage, defective units, and scrap. Reports to management. Prerequisite: 251-12.

351-8 (4,4) Intermediate Accounting. Further study of current accounting principles and procedures relating to various elements of financial reporting. Special emphasis on asset valuation, income determination, and alternative statement construction. Also, analysis and interpretation of statements; preparation and use of special statements. Must be taken in a,b sequence. Prerequisite: 251-12.

355-3 Governmental Accounting. Study of the unique characteristics of fund accounting used in governmental units and subdivisions, and in certain private institutions. Emphasis upon budgeting and accounting control as a means of furthering sound financial administration of these organizations. Prerequisite: 251-12.

410-4 Accounting Concepts. Interpretation and critical analysis of reports, statements and other accounting data from the viewpoint of users of financial information. For entering MBA students.

415-4 Electronic Data Processing in Business. A study of the uses of electronic computers in business data processing. Includes an introduction to linear programming as it assists management in decision making. The student will prepare some programs in compiler language. There will be a limited amount of instruction in the operation of computer equipment. Prerequisite: 251-2 and consent of instructor.

432-4 Problems in Federal Taxation. Study of income tax problems which arise from partnership, corporation, estate, and trust types of organization. Brief study of social security, federal estate, and gift taxes. Student does research in source materials in arriving at solutions of complicated tax problems. Prerequisite: 331.

442-4 Advanced Cost Accounting. Managerial control and profit planning through direct and relevant costing, return on investment, capital budgeting, inventory planning and control, subjective probabilities, statistical methods, and operations research. Nonmanufacturing costs, differential and comparative cost analysis. Prerequisite: 341.

453-4 Advanced Accounting. Advanced study of accounting principles and procedures relating to specialized topics, including partnership equity, installment

and consignment sales, insurance, branch accounts, compound interest in relation to accounting practice, and preparation and use of consolidated statements. Prerequisite: 351-8.

456-4 Auditing. Objectives, standards, and procedures involved in examining and reporting on financial statements of business organizations. Prerequisites: 331, 341, 351-8.

458-4 Accounting Systems. Problems in accounting systems design and installation. Examination of existing systems and practice in system design and reports. Prerequisites: 341, 351-8.

459-4 Internship in Accounting. Supervised work experience in professional accounting. Prerequisite: outstanding record in accounting and recommendation of the committee on internship.

461-4 C.P.A. and Advanced Accounting Problems. A problems approach to accounting principles and procedures, with emphasis on financial reporting and additional specialized topics, primarily using the standardized examination of the American Institute of Certified Public Accountants. Prerequisites: 341, 351-8.

Aerospace Studies

100a-0 Corps Training.

101-1 Evolution of Conflict. One hour lecture-discussion; one hour Corps Training.

102-1 United States Defense Organization. One hour lecture-discussion; one hour Corps Training.

103-1 United States Military Posture. One hour lecture-discussion; one hour Corps Training.

200a-0 Corps Training.

201-1 United States Military Forces. One hour lecture-discussion; one hour Corps Training.

202-1 Aerospace Support Forces. One hour lecture-discussion; one hour Corps Training.

203-2 Ideological Conflicts. Two hours lecture-discussion; one hour Corps Training.

300-0 Corps Training.

301-3, 302-3, 303-3 Aerospace Studies 3 Professional Officer Course. A study of the nature of war, the growth and development of aerospace power, the United States Air Force, astronautics and space operations, and the future development of aerospace power. Involves specific exercise of written and spoken communication skills. Requires 3 hours lecture-seminar; A 1 hour corps training period is also required. Prerequisites: satisfactory completion of the GMC or six week field training course.

340-0 Corps Training.

350-2 Aerospace Studies 4. A study of flight regulations, weather, and navigation. 2 hours lecture, demonstration-performance. Prerequisite: Enrollment in AF ROTC Flight Instruction Program or with consent of the PAS.

351-3, 352-3, 353-3 Aerospace Studies 4. Professional Officer Course. A study of professionalism, leadership, and management. Includes professional responsibilities, the military justice system, leadership theory, functions and practices, management principles and functions, problem solving, and management tools, practices, and controls. Three hours lecture-seminar; A 1 hour corps training period is also required. Prerequisite: A.S. 301, 302, and 303, or with consent of the PAS.

Agricultural Industries

114-4 Introduction to Agricultural Economies. Agriculture in local and national economy; distribution; size and organization of the farm business units; policies affecting agriculture.

210-2 Introduction to Agricultural Education. An introduction to the history and philosophy of agricultural education.

214-2 Agricultural Drawing. The fundamentals of lettering; use of instruments, orthographic and isometric projections, topographic drawing, and graphic depiction of statistical information.

215-4 Introduction to Farm Structures and Electrification. An introduction to

- the basic concepts of structures and electricity as they apply to agriculture. Includes farm structures, soil and water structures, and farm electrification.
- 303-4 Surveying.** Elementary surveying; use of tape, compass, level, and transit, with practice in making simple maps. Prerequisite: 214, and Mathematics 114c.
- 306-5 (3,2) Soil and Water Conservation.** (Same as Plant Industries 306.) (a) The study of the theoretical factors affecting soil erosion and excessive water run-off, including practices of water management and soil conservation. Prerequisite: one course in soils. (b) Laboratory. Practical structural methods of controlling water run-off and soil erosion. Prerequisite: 306a or concurrent enrollment.
- 309-5 Agricultural Education.** Methods of teaching agriculture in secondary schools. Take concurrently with 312 in a professional quarter. Field prerequisites: GSB 201b, Guidance 305, Secondary Education 310, 48 hours in agriculture.
- 310-4 General Agriculture.** A survey of the agricultural field as it relates to the art and science of food and fiber production; problems in livestock and poultry production; soil and water management; and field crops, fruit, and vegetable production. No credit for Agriculture Majors.
- 311-3 Adult Education in Agriculture.** Nature and scope of adult education in agriculture; methods of effectively working with adult and young farmer groups. Prerequisite: Guidance 305.
- 312-12 (2,10) Student Teaching in Vocational Agriculture.** (a) Summer Practice. An internship with the vocational agriculture teacher in an approved center for practice in summer activities. (b) Student teaching. Experience in conducting a complete program in vocational agriculture in an approved center. Taken concurrently with 309.
- 350-5 Farm Management.** Measuring profits, principles, and practice in organizing and operating the business. Field trips. Prerequisites: GSB 211a, junior standing.
- 351-4 Farm Financial Management.** Farm records and accounts as aids in solving financial problems; obtaining and using credit and insurance, budgeting. Prerequisite: 350 or consent of instructor.
- 352-3 Agricultural Prices.** Fluctuations in the general price level, causes and stabilization policies as they affect agriculture. Price determination including the measurement of supply and demand, elasticity, their application to price stabilization. Prerequisites: 354, GSB 211a.
- 354-3 Agricultural Marketing.** Marketing outlets for farm products, price determinants, agricultural market efficiency, margins, and costs. Prerequisite: GSB 211a.
- 373-5 Farm Power and Machinery.** A basic course to acquaint the student with the principles, operating adjustments, maintenance, and management of common farm power units and field machines. Prerequisite: Mathematics 111a or equivalent.
- 374-4 Farm Electrification.** A study of the more common electrical fundamentals and their application to farmstead needs; factors to consider in the selection and use of specialized electrical equipment and motors. Prerequisite: Mathematics 111a.
- 375-3 Farm Shop.** Set-up of the farm workshop; selection, care, and use of tools and machinery for farm repair work; equipment construction. Prerequisite: Mathematics 111a or equivalent.
- 376-4 Advanced Farm Power.** An advanced treatment of selected topics including power and power measurement, fuels and lubricants, basic mechanics of the farm tractor chassis, newer types of transmissions, use of test and tuneup equipment. Prerequisite: 373.
- 377-4 Farm Structures.** Basic requirements of farm buildings; materials used; elementary principles of design; practical application of these principles. Prerequisite: Mathematics 111a or equivalent.
- 381-1 to 2 Agricultural Seminar.** (Same as Animal Industries 381, Forestry 381, and Plant Industries 381.) Discussions of problems in agriculture. Limited to senior students.
- 390-1 to 6 Special Studies in Agricultural Industries.** Assignments involving research and individual problems. Field trips. Prerequisite: consent of chairman.
- 410-2 to 4 Problems in Agricultural Services.** Discussion, assignments, and

special workshops on problems related to in-service training programs in the agriculturally related fields. Development of more effective programs in working with farm people. Prerequisite: graduate student in agricultural services or consent of instructor.

411-3 Agricultural Extension. A study of the history, organization, objectives, programs, and methods of agricultural extension work. Prerequisite: Journalism 393 and a course in psychology or sociology or consent of instructor.

413-3 Agricultural Education Practices. A discussion of problems and practices in teaching agriculture. Prerequisite: 312b.

417-4 Agricultural Development in Emerging Countries. Principles and practices in improving agriculture in areas with limited capital and low levels of technology. Special emphasis on developments in Asia, Africa, and South America. Prerequisite: GSB 211a.

450-4 Advanced Farm Management. Methods of analyzing farm enterprises, comparing farm businesses, allocating farm resources, combinations of enterprises, and production factors. Field trips. Prerequisite: 350.

456-11 (3,2,2,2,2) Agricultural Marketing Problems and Practices. (a) Cooperatives. Development of the agricultural cooperative movement, agricultural cooperative organization, legal requirements, principles and practices of agricultural cooperative associations. (b) Livestock. Problems and their solutions in marketing livestock. (c) Field Crops. Problems and their solutions in marketing field crops. (d) Dairy and Poultry. Problems and their solutions in marketing dairy and poultry products. (e) Horticultural crops. Problems and their solutions in marketing horticultural crops. Field trips cost \$5. Prerequisites: 354, GSB 211a, or consent of instructor.

471-4 Land Resource Economics. (Same as Forestry 471 and Economics 471.) The use of land as an economic variable in production of goods and services; land markets; group versus individual conflicts; elementary land resources planning techniques. Field trips. Prerequisite: 350 or Forestry 470.

478-4 Advanced Farm Machinery. Materials on construction; basic mechanics involved in tillage machinery; rotary power transmission; product cleaning, drying, and sorting; costs of operation; materials handling. Prerequisites: 350, 373, 374, or consent of instructor.

505-3 Agricultural Economics Research Methods.

520-1 to 6 Readings.

520b-1 to 6 Readings in Resource Economics.

550-4 Production Management.

552-2 Advanced Agricultural Prices.

554-4 Advanced Agricultural Marketing.

575-1 to 6 Research.

581-1 to 6 Seminar.

582-1 to 3 Seminar on Foreign Agricultural Problems.

599-2 to 9 Thesis.

Animal Industries

105-4 Animal Husbandry. Survey of beef cattle, sheep, and hog industries; laboratory work in judging. Field trip.

125-4 Elementary Poultry Production. Brooding and rearing of chicks; housing, feeding, disease control, flock selection, management, and marketing.

231-4 Dairy Husbandry. Introductory work, including selection, herd improvement, milk secretion, manufacturing of dairy products.

311-7 (2 or 3,2,2) Evaluation and Selection of Farm Animals and Animal Products. (a) Comparative selection and evaluation of livestock and poultry and their products. (b) Grading and selection of breeding and producing meat animals, dairy or poultry. (c) Comparative grading and selection of live animals and evaluation of products. Those with interest in livestock or poultry must take in a, b, c, sequence, while those interested in dairy must take in b, c, sequence. Prerequisite: 105 or 125 or 231 and consent of instructor.

315-4 Feeds and Feeding. Principles of domestic animal nutrition and feeding. Balancing rations. Prerequisite: 105, 125, or 231.

316-4 Insect Pests and Their Control. (See Zoology 316.)

319-3 Horses. Types, breeds, selection, use, care, and management of saddle and draft animals. Field trip. Prerequisite: 315 or consent of instructor.

- 321-4 Processing and Grading of Poultry Products.** Skills required in price determination, processing, grading, storage, merchandising, and distribution of poultry products. Prerequisite: 125.
- 327-4 Hatchery and Breeding Farm Management.** Flock selection, testing, sexing, trade rules and regulations, trap-nesting, wing-banding, incubation, disease control, hatchery-producer agreements, records. Prerequisite: 125.
- 332-4 Animal Breeding and Genetics.** The application of the basic principles of genetics and breeding systems to the improvement of farm animals. Prerequisites: 105, 125, or 231; GSA 203 or equivalent.
- 337-4 Animal Hygiene.** Contagious, infectious, and nutritional diseases and parasites of animals; their prevention and control. Field trip. Prerequisites: 105, 125 or 231.
- 381-1 to 2 Agricultural Seminar.** (Same as Agricultural Industries 381, Forestry 381, and Plant Industries 381.) Discussions of problems in agriculture. Limited to junior and senior students.
- 390-1 to 6 Special Studies in Animal Industries.** Assignments involving research and individual problems. Approval of department chairman required. Juniors and seniors only.
- 415-8 (4,4) Animal Nutrition.** (a) Physical and chemical properties of nutrients and their uses and principles involved in determination of nutrient requirements. (b) An integration of the basic facts concerning the nature of nutrients and their metabolism. Must be taken in a,b sequence. Prerequisite: 315 and organic chemistry or equivalent.
- 420-4 Commercial Poultry Production.** Broilers, layers, and turkeys as adapted to poultry specialty farms. Field trips. Prerequisite: 125.
- 430-4 Dairy Production.** Milk sanitation, feeding, breeding, calf raising, records, buildings and equipment, sanitation, and diseases. Field trip. Prerequisites: 231, 315, 332.
- 431-4 Reproduction and Artificial Insemination of Farm Animals.** The anatomy and physiology of reproduction and the principles of artificial insemination in farm animals. Field trip. Prerequisites: 105 or 231; GSA 201C or equivalent.
- 432-3 Quantitative Inheritance of Farm Animals.** A review of the principles underlying the influence of mutation, selection, migration, and random drift in animal breeding populations; estimation and interpretation of heritabilities and genetic correlations; effects of variances of quantitative traits of farm animals. Prerequisite: 332.
- 433-3 Feeding Dairy Cattle.** Nutrient requirement of dairy cattle. Feeding calves and heifers for commercial growth, and cows for economical milk production. Pasture, hay, and silage utilization in milk production. Field trip. Prerequisites: 231 and 315 and organic chemistry.
- 456-4 (2,2) Agricultural Marketing Problems and Practices.** (b) Livestock. Problems and their solutions in marketing livestock. (d) Dairy and poultry. Problems and their solutions in marketing dairy and poultry products. Prerequisites: GSB 211a, Agricultural Industries 354 or consent of instructor. (See also Agricultural Industries 456.)
- 465-5 Swine Production.** Breed selection, breeding, feeding, management, and marketing of swine. Field trip. Prerequisites: 105, 315, 332.
- 480-4 Sheep Production.** Breeding, feeding, and management of sheep. Field trip. Prerequisites: 105, 315, 332, 431.
- 485-4 Beef Production.** Breeding, feeding, and management of beef and dual-purpose cattle. Field trip. Prerequisites: 105, 315, 332, 431.
- 486-4 The Range Livestock Industry.** Designed to acquaint advanced animal industries students with range livestock operation; consists of full-time classroom review of beef cattle and sheep production followed by a two-to-three-week field trip through the range area. Prerequisites: 480, 485. Summer only.
- 487-4 Commercial Livestock Feeding.** Consideration of principles and problems in fattening beef cattle and sheep for market. Field trip. Prerequisites: 105 and 315 and organic chemistry.
- 505-8 (4,4) Research Methods in Agricultural Science.**
- 520-1 to 6 Readings in Animal Industries.**
- 525-4 Advanced Poultry Production.** Prerequisite: Organic Chemistry.
- 530-4 Advanced Dairy Production.**
- 565-4 Advanced Swine Production.**
- 575-1 to 6 Individual Research.**
- 579-4 Animal Behavior.**

581-1 to 6 Seminar.
585-4 Advanced Beef Production.
599-2 to 9 Thesis.

Anthropology

- 300-3 **Physical Anthropology.** Man as a biological being, his relationships to other living things. Human origins and development. Concept of race and the races of mankind. Human genetics and normal human variation.
- 303-3 **Old World Prehistory.** A survey of man's earliest cultural beginnings. Paleolithic and Neolithic periods in Europe, Africa, the Near East, and Asia.
- 304-3 **The Origins of Civilization.** A study of the complex environmental and cultural factors that led to the rise and fall of early high-cultures in both the Old and New Worlds.
- 305-9 (3,3,3) **Peoples and Cultures of the World I.** The biological and cultural history of man in (a) North America, (b) Asia, and (c) Oceania from early times to the present.
- 306-9 (3,3,3) **Peoples and Cultures of the World II.** The biological and cultural history of man in (a) South America, (b) Europe, and (c) Africa from early times to the present.
- 400-4 **Man and Culture.** The nature of culture and cultural process. Relationships of culture and man as an individual and as a group. Emphasis on "the anthropological point of view."
- 401-4 **Language in Culture.** Language as a part of culture. Linguistics and the study of culture.
- 402-4 **Human Biology: The Interaction of Biological and Cultural Behavior.** The viewing of man as to his zoological position, genetics, past and present; and the biological bases for his unique behavior in the animal world, i.e., cultural behavior.
- 404-4 **Primitive Art and Technology.** The development of man as a tool-using and art-loving being. Artistic and technological traditions of non-Western peoples, past and present.
- 405-4 **Social Anthropology.** A comparative approach to the organizational features of human groups. Functional aspects and distributions of kinship, political, religious, and economic systems.
- 408-8 (4,4) **History of Anthropological Thought.** The growth of anthropology to about 1860, followed by a more intensive survey of the concepts and ideas of anthropology during the past hundred years.
- 409-4 **Anthropology and Modern Life.** The applications of anthropological principles to the solution of problems of the modern world. Contributions of anthropology to the work of the educator, social worker, administrator, business man, government official, and other specialists dealing with man in Western and non-Western cultures.
- 413-4 **Introduction to General Linguistics.** A study of language theory, classification, and change.
- 415-3 **Logic of the Social Sciences.** (Same as Philosophy 415.) Logical and epistemological examination of the social studies as types of knowledge. Basic problems in philosophy of science with major emphasis upon social science; relationship of theory to fact, nature of induction, nature of causal law, testability, influence of value judgments, etc. Intended for students with considerable maturity in a social science or in philosophy.
- 418-4 **Languages of the World.** A description of typological and genetic (historical) relationships among languages of the world with emphasis on comparative phonology and grammatical structure in time and space.
- 483-3 to 18 **Individual Study in Anthropology.** Guided research upon anthropological problems. Students should consult the chairman before enrolling.
- 501-9 (3,3,3) **Proseminar in Physical Anthropology.**
- 503-9 (3,3,3) **Proseminar in Archaeology.**
- 505-9 (3,3,3) **Proseminar in Linguistics.**
- 507-9 (3,3,3) **Proseminar in Social Anthropology.**
- 509-9 (3,3,3) **Proseminar in Ethnology.**
- 510-3 to 9-Seminar in New World Archaeology.
- 511-3 to 9 Seminar in Mesoamerican Archaeology.
- 512-3 to 9 Seminar in Old World Archaeology.
- 520-3 to 9 Seminar in the Ethnology of the New World.

- 521-3 to 9 Seminar in the Ethnology of Mesoamerica.
- 522-3 to 9 Seminar in the Anthropology of Oceania.
- 523-3 to 9 Seminar in the Anthropology of Africa.
- 524-3 to 9 Seminar in the Anthropology of Europe.
- 535-3 to 9 Seminar in Physical Anthropology.
- 545-3 to 9 Seminar in Linguistics.
- 550-3 to 9 Seminar in the Cultures of Latin America.
- 560-3 to 9 Seminar in Comparative Social Organization.
- 562-3 to 9 Seminar in the Anthropology of Contemporary Peoples.
- 565-3 to 9 Seminar in Cultural Change and Development.
- 567-3 to 9 Seminar in Anthropological Theory and Method.
- 570-3 to 9 Seminar in Art and Technology.
- 575-3 to 9 Seminar in the Individual and Culture.
- 581-3 to 9 Seminar in Anthropology.
- 582-3 to 9 Problems in Archaeology.
- 584-3 to 9 Problems in Cultural Anthropology.
- 585-3 to 9 Readings in Anthropology.
- 595-6 (3-3) Field Methods in Ethnology.
- 596-6 (3-3) Field Methods in Archaeology.
- 597-3 to 27 Fieldwork in Anthropology.
- 599-1 to 9 Thesis.
- 600-1 to 48 Dissertation. (No more than 18 hours in any quarter).

Applied Science

- 300-5 University Physics IV. (See Physics 300)
- 307-5 Analytical Problems in Technology. Methods of formulation and solution of special problems encountered in industry and technology using advanced techniques. Prerequisites: Mathematics 111a,b or equivalent.
- 401-12 (4,4,4) X-Ray Crystallography. (a) Introductory Crystallography. Lattice theory of the crystal. Miller indices. Crystal zones. The Bravais lattices. Symmetry elements. Proper and improper rotations. Point groups: crystal classes. Operators involving translation. Space groups. Elements of crystal structure. Coordination. Structure types. (b) X-Ray Diffraction Techniques. X-ray diffraction by single crystals: fundamental equations. Reciprocal lattice and Ewald sphere. Optical analog: The optical diffractometer. Single crystal photographic methods: the Laue method: rotating and oscillation, Weissenberg, Buerger-procession and Jong-Bourman. Divergent and convergent-beam techniques. Interpretation of the x-ray diagrams. Diffractometric methods; fundamentals. Identification of polycrystalline materials with x-ray diffractometer (power method). Single crystals diffractometry. Absolute intensity measurements. (c) Crystal Structure Analysis. Fundamental diffraction relations. Determination of the cell size, chemical formula, symmetry and space group. Measurement of intensities: geometrical and physical factors affecting intensities. The structure factor; phase of the structure factor. The anisotropic temperature factor. Fourier synthesis. Electron-density projections. The phase problem. Utilization of anomalous dispersion. Direct determination. The Patterson method. Refinement of the structure with high speed computers.
- 418-3 Digital Computers in Research. Computational techniques for matrix inversion, solution of linear equations, and characteristic roots and vectors; least squares analysis, curve-fitting, and regression; design of experiment; solution of nonlinear equations; min-max functional approximation techniques; generation of approximate solutions, Monte Carlo techniques. Prerequisite: Engineering 222 or Mathematics 225 or equivalent and concurrent enrollment in Mathematics 421a.
- 419-3 Computer Applications. A study of methods for efficient utilization of high speed electronic data processing equipment in the processing of statistical data. Emphasis is on principles of applications of computing equipment to the solution of statistical problems. Students are expected to solve problems on the computers. Prerequisite: Mathematics 410a or Guidance 520a or Psychology 520, and a knowledge of FORTRAN or consent of instructor.
- 421-3 Programming Languages. A study of the development and use of programming languages for high speed stored program digital computers.

Included are problem-, procedure-, and machine-oriented languages, symbolic languages, interpretive systems, macro assemblers, and list processors. A comparison of the languages will be made and each student will prepare programs using the languages studied. Prerequisite: Engineering 222, Mathematics 225 or consent of instructor.

422-3 Programming Systems. The use and methods of electronic data processing systems. Topics are searching, ordering, codifying, information retrieval, process control, executive routines, and heuristic programming. The student will apply system techniques for solution of problems using one or more of the available high speed digital computers. Prerequisite: Engineering 222 or Mathematics 225 or consent of instructor.

425-2 to 8 Practicum in Technology. Experiences in the industrial applications of technological knowledge. Cooperative arrangements with selected corporations and professional organizations provide opportunity to study technical problems in the industrial environment under the directions of specialists. Prerequisite: 12 hours in technical subjects; consent of the coordinator.

430-2 to 8 Special Problems in Industry and Technology. Special opportunity for students to obtain assistance and guidance in the investigation and solution of selected technical problems. Prerequisite: consent of coordinator.

431-9 (3,3,3) Nuclear Science. An introductory course to provide a background for further work in Nuclear Science. Lectures and problems in radioactivity and the uses of radio isotopes, nuclear engineering, introductory reactor theory, and use of an analog computer in solving problems of neutron transport and reactor kinetics. Prerequisites: Mathematics 252b and Applied Science 300.

432-3 Nuclear Laboratory. Health physics instruments; characteristics of alpha, beta, and gamma rays; radioactive decay; counting statistics; fundamental neutral experiments. Prerequisite: 300.

450-4 Fundamentals of Reactive Systems. Chemical processes, stoichiometry, properties of gases, solution chemistry, modern techniques of analysis, surface chemistry. Nonideal systems, rates and mechanisms of industrial processes. Instrumentation and process control. Laboratory. Prerequisites: Chemistry 111b,c and one year of calculus or consent of instructor.

470-6 (3,3) Engineering Analysis. (a) Basic vector field theory; transformation theorems. Methods of solution for basic ordinary differential equations with applications to engineering systems. Prerequisite: Mathematics 252b (b) Basic methods of solution for partial differential equations with emphasis on applications of the Laplace, Poisson and heat equations to engineering problems. Basic complex variables, matrix theory, numerical analysis and simulation techniques applied to engineering systems. Prerequisite: 470a or Mathematics 305a.

501-16 (4,4,4,4) Materials Science.

503-12 (4,4,4) Physical Properties of Crystalline Materials.

504-12 (4,4,4) X-Ray Diffraction and the Solid State.

521-6 (3,3) Design of Automatic Programming Language Processors.

522-6 (3,3) Programming Systems Design.

530-3 Nuclear Processing.

570-2 to 6 Special Investigations.

580-1 to 9 Seminar.

599-1 to 9 Thesis.

Art

Art Education Courses: 300, 306, 307, 308, 365, 408, 460, 466, 560, 566, 599.

Art History Courses: 225, 309, 345, 346, 347, 348, 349, 350, 356, 369, 380, 445, 449, 471, 473, 475, 482, 483, 571, 573, 599.

Studio Courses: 100, 200, 302, 325, 332, 341, 358, 385, 393, 400, 401, 404, 405, 406, 410, 416, 420, 426, 430, 436, 440, 441, 446, 493, 501, 502, 504, 506, 511, 516, 520, 526, 530, 540, 546, 599.

100-15 (5,5,5) Basic Studio. A studio course in visual fundamentals emphasizing the ways in which art may be structured. Studio experience in two- and three-dimensional materials. Must be taken in a,b,c sequence.

- 200-12 (4,4,4) Studio Disciplines.** Disciplines in drawing, painting, and sculpture.
- 225-9 (3,3,3) Introduction to Art History.** The student is acquainted with the nature of art as a human activity in order to gain an understanding of its significance now and in the past through three distinct sequential courses: (a) the nature of visual art and history, (b) classification of art in major historical periods, and (c) representative problems in the history of art.
- 245-2 to 12 The Figure.**
- 300-12 (4,4,4) Art Education.** Theory and practice of art activities in the elementary schools. Designed for elementary education students.
- 302-2 to 12 Pottery.** Advanced subject matter adjusted with reference to number of hours of credit in ceramics previously earned.
- 306-3 Materials and Techniques in Art Education.** Studio courses providing a broad experimental experience with materials and techniques adaptable to art classes in grade and high school. In addition to studio assignments, each student is required to complete a working file of published material and notes on materials and techniques in art.
- 307-3 Theory and Philosophy of Art Education.** Survey of art education theory providing the art education student with an introduction to theoretical studies in his field, and through scheduled observation visits to art classes at the University School, with the problems of relating theory to practice.
- 308-3 Curriculum and Administration in Art Education.** Provides experience in dealing with problems of planning, organizing, introducing, and administering art curricula in grade and high school. Includes comparative study of published material and preparation of a working file on the subject.
- 309-3 Oriental Art.** A survey of Asiatic arts.
- 320-2 to 12 Oil Painting Techniques.** Individual work in the development of painting ideas. Prerequisite: 100, 200.
- 323-4 The Figure Advanced.**
- 325-2 to 15 Studio.** No more than 4 hours per quarter. Prerequisites: 8 hours in medium of choice (except where such courses do not exist) and consent of instructor.
- 332-2 to 12 Jewelry and Silversmithing.** Basic processes in jewelry and metalwork. Emphasis upon design experience and high critical standard.
- GSC340 Art of the Nineteenth Century.** A survey of modern art history from the French Revolution to the present: (a) art from the beginning of the Romantic period through Impressionism, (b) post impressionism and the early 20th century, and (c) art since the First World War.
- 341-2 to 12 Drawing.**
- 350-6 (3,3) American Art.** A survey of American painting, sculpture, and architecture from the early 18th century to the present.
- 351a-3 Art of Ancient Asia and America.** A survey of early developments in architecture and the plastic arts of related civilizations in India, China, Japan and Ancient America, from Prehistoric evidence to major monuments of the First Millennium, A.D.
- 351b-3 Oriental Art.** General survey of the major pictorial arts of China from six dynasties to Ch'ing dynasty, of Korea from Silla period to 'Ti dynasty, and of Japan from Asuka to Edo periods. Some attempt will be made to trace influences central to the development and spread of important styles and to relate art to the classics of Oriental aesthetics. Special emphasis will be placed upon Sung painting.
- 351c-3 Islamic Art.** A survey of important monuments and art works produced in the context of Islamic culture in the Near East, Africa, Spain, Persia, Turkey and India from the 17th century to the present.
- 356-3 Theory of Art.**
- 358-2 to 12 Prints.** Introduction to printmaking as a medium. Studio projects in intaglio, relief, and planographic processes.
- 365-4 Art Education in the Secondary Schools.** For art education students preparing to teach on secondary level; includes studio projects designed to develop awareness of technical and aesthetic needs of high school students, reading and discussion of literature, planning of curriculum.
- 369-3 Primitive Art.** A study of the arts of "Primitive" peoples of Africa, the Pacific, and the Americas. Characteristic works are interpreted in context with the general conditions of primitive society. The significant influences of primitive art on modern painting and sculpture are considered.
- 380-4 Theory and Appreciation of Art.**

- 385-2 to 12 **Weaving.** Development of understanding of two and four harness loom and essential processes in weaving simple and pattern textiles.
- 393-4 to 12 **Sculpture.** Problems in modeling, carving, casting and construction. Prerequisite: 200-12.
- 401-2 to 12 **Research in Painting.**
- 405-2 to 12 **Studio in Sculpture.**
- 406-2 to 12 **Studio in Painting.**
- 408-4 **Art Education for Elementary Teachers II.**
- 410-2 to 12 **Research in Prints.**
- 416-2 to 12 **Studio in Prints.**
- 420-2 to 12 **Research in Pottery.**
- 426-2 to 12 **Studio in Pottery.**
- 430-2 to 12 **Research in Metal Construction.**
- 436-2 to 12 **Studio in Metal Construction.**
- 440-2 to 12 **Research in Weaving.**
- 441-2 to 6 **Studio in Drawing.**
- 445-9 (3,3,3) **Modern Art.** (a) 19th century, (b) Early 20th century (c) Mid 20th century.
- 446 2 to 12 **Studio in Weaving.**
- 447a-3 **The Art of Ancient Egypt and The Near East.** A survey of principal monuments and archeological evidence relevant to an appraisal of the origins and development of art in the early civilizations of Africa, Western Asia, Europe, and the Aegean from prehistoric times to the rise of the Persian Empire.
- 447b-3 **The Art of Ancient Greece.** A study of the origins, development and influence of art produced in Greece and its colonies from the Bronze age to the Roman Empire.
- 447c-3 **The Art of the Ancient Romans.** An appraisal of the natural culture and art of the Roman civilization, its debt to other ancient civilizations and achievements in architecture, sculpture and painting from its foundation until the reign of Constantine.
- 448a-3 **Early Christian and Byzantine Art.** A survey of problems related to art and architecture produced in Christian communities and under the aegis of the Byzantine Empire until the fall of Constantinople.
- 448b-3 **Early Medieval and Romanesque Art.** A study of the development of architecture and art in Europe from the fall of the Roman Empire to the formulation of the Gothic style.
- 348c-3 **Gothic Art.** A survey of major developments in Architecture, Sculpture and Painting in Europe from the earliest formulation of Gothic style to its decline in the Renaissance period.
- 449a-3 **Art of the Renaissance in Europe.** A study of developments in art during the 15th century in Italy and the Lowlands leading to the High Renaissance and its impact on European painting, sculpture and architecture of the 16th century.
- 449b-3 **Baroque Art in Europe.** A study of the formation of national styles in the arts of Italy, Spain, Austria, Germany, France, Flanders and Holland from the 16th to the 17th centuries with particular attention to major masters.
- 449c-3 **The Art of 18th Century Europe.** A study of architecture, sculpture and painting in European countries and colonies from the end of the seventeenth century to the French Revolution with particular emphasis on the Rococo Art of Italy, England, Spain and France.
- 450-1 **The Visual Arts in Higher Education.**
- 451a-3 **Art of Ancient Asia and America.** A survey of early developments in architecture and the plastic arts of related civilizations in India, China, Japan and Ancient America, from prehistoric evidence to major monuments of the First Millenium A.D.
- 451b-3 **Painting in the Far East.** General survey of the major pictorial arts of China from six dynasties to Ch'ing dynasty, of Korea from Silla period to Ti dynasty, and of Japan from Asuka to Edo periods. An attempt will be made to trace influences central to the development and spread of important styles and to relate art to the classics of Oriental aesthetics.
- 451c-3 **Islamic Art.** A survey of important monuments and art works produced in the context of Islamic culture in the Near East, Africa, Spain, Persia, Turkey and India from the 7th century to the present.
- 460-2 to 12 **Research in Art Education.**
- 466-2 to 12 **Studio in Art Education.**

471-3 Baroque Painting in Italy. Major developments in style and expression in Italian painting from the Late Mannerist Period until the early 18th century.

482-15 (3,3,3,3,3) Art History Seminar. Lectures, discussions and reports on subjects of special interest which will be announced periodically in the following general areas: (a) ancient art, (b) medieval art, (c) Renaissance art, (d) modern art, and (e) oriental art.

483-15 (3,3,3,3,3) Research in Art History. Individual research in the painting, sculpture, architecture, and related art in the following areas: (a) ancient art, (b) medieval art, (c) Renaissance art, (d) modern art, and (e) oriental art.

493-2 to 12 Advanced Sculpture.

501-2 to 12 Seminar in Painting.

502-2 to 12 Seminar in Sculpture.

504-2 to 12 Research in Sculpture.

506-2 to 12 Research in Painting.

511-2 to 12 Seminar in Prints.

516-2 to 12 Research in Prints.

520-2 to 12 Seminar in Pottery.

526-2 to 12 Research in Pottery.

530-2 to 12 Seminar in Metal Construction.

536-2 to 12 Research in Metal Construction.

540-2 to 12 Seminar in Weaving.

546-2 to 12 Research in Weaving.

560-2 to 12 Seminar in Art Education.

566-2 to 12 Research in Art Education.

571-2 to 5 Readings in Art History.

573-3 to 12 Problems in Art History.

599-5 to 9 Thesis.

Botany

300-3 Morphology of Non-Vascular Plants. Introduction to the structure, development, and relationships of the algae, fungi, and bryophytes. Prerequisite: GSA 201b.

301-3 Morphology of Vascular Plants. Introduction to the structure, development, and relationships of the fern-allies, ferns, gymnosperms, and angiosperms. Prerequisite: GSA 201b. Recommended: Botany 300.

GSA 303-3 Ferns, Trees, and Wild Flowers: The Pleasure of Recognition.

308-5 Taxonomy of Cultivated Plants. A study of the classification of woody and herbaceous cultivated plants, both exotic and native. Prerequisite: consent of instructor.

315-4 Plant Genetics. (Same as Plant Industries 315.) A general course involving principles of evolution and genetics of plants. Prerequisite: secondary concentration in agriculture, botany, or zoology.

320-5 Elements of Plant Physiology. A study of the functions of plants and their relation to the various organs. Three lecture and 4 laboratory hours per week. Prerequisite: GSA 201b; chemistry 350 or a secondary concentration in chemistry.

321-3 to 5 Elementary Botanical Microtechnique. Methods of preservation and preparation of plant materials for examination by the light microscope. One lecture and 4 laboratory hours per week. Prerequisite: GSA 201b.

GSA 340-3 Ecology.

341-3 Autecology. An introduction to plant life processes and life form in relation to the factors of the environment. Prerequisite: 320, GSA 340, or consent of instructor. Field and laboratory expenses \$5.

GSA 345-3 Economic Botany.

390-2 to 4 Readings in Botany. A course of individually assigned readings in classical botanical literature; both oral and written reports required; open only to undergraduate students. Prerequisites: concentration in botany, consent of instructor.

391-2 to 5 Special Problems in Botany. Individual laboratory or field work under supervised direction. Both written and oral discussions required. Prerequisite: concentration in botany, consent of department or division.

400-5 Plant Anatomy. An introduction to cell division, development, and

maturation of the structures of the vascular plants. Laboratory. Cost \$5. Prerequisites: 300, 301.

404-5 The Algae. Structure, development, and relationships of the algae. Laboratory and some field work. Prerequisite: 300.

405-5 Mycology. Structure, development, and relationships of the fungi. Problems of economic and scientific interest stressed. Laboratory. Prerequisite: 300.

406-5 Industrial Mycology. A consideration of the myriad ways in which fungi impinge on man's affairs, with special emphasis upon their various industrial application—real and potential. Three lectures and 4 laboratory hours per week. Prerequisite: 405 or consent of instructor.

411-4 The Bryophytes and Pteridophytes. Structure, development, and relationships of the liverworts and mosses, and the ferns and fern allies. Laboratory. Prerequisite: 301.

412-4 The Spermatophytes. Structure, development, and relationships of the gymnosperms and angiosperms. Laboratory. Prerequisites: 301, 313, or GSA 303.

414-5 Paleobotany. (Same as Geology 414). An introduction to the study of fossil plants emphasizing the major features of plant evolution and the applications of paleobotany to problems in the botanical and geological sciences. Lecture, laboratory, and field trips. Student cost about \$5. Prerequisite: 310 or 400 or consent of instructor.

420-4 Physiology of Fungi. A treatment of the physiological activities of fungi with particular stress upon (1) those aspects peculiar to the group by virtue of their being non chlorophyllous plants, and (2) exploration of the possible explanations of the parasitic vs. the saprophytic habit. Prerequisite: consent of instructor.

425-15 (5,5,5) Advanced Plant Physiology. (a) Physics of the plant, water relations, membrane phenomena, photobiology. (b) Covers the absorption, translocation, function and interaction of inorganic nutrient elements in green plants with application to forest, agronomic, and horticultural species. (c) Chemistry of the plant; anabolic and catabolic processes, photosynthesis, respiration, chemosynthesis. Prerequisites: 320, Chemistry 350, or a secondary concentration in chemistry.

428-3 Plant Nutrition. The physiological importance of carbon, nitrogen, and phosphorus-containing compounds is stressed. Prerequisites: organic chemistry, secondary concentration in botany or agriculture.

440-4 Ecology of Grasses and Grasslands. Structure, analysis, and dynamics of grassland communities; structure and growth of individual species. Field and laboratory work costs about \$5. Prerequisite: GSA 340 or consent of instructor.

445-5 Ecology of Forests and Arable Lands. Forest areas in North America. Developmental and structural analysis of forest types. Autecology of important species. Field trips, approximate cost \$10. Prerequisite: GSA 340.

449-3 Elements of Taxonomy. Principles of taxonomy including historical sketch, phyletic concepts, biosystematics, classical and experimental methods. Lecture. Laboratory. Prerequisite: 313 or equivalent, or consent of the instructor.

450-3 Plant Geography. World distribution of plants related to environmental, floristic, and historical factors. Prerequisites: consent of instructor.

451-4 Introduction to Floristics. Principles involved and methods used in the analysis of the flora of an era. Laboratory and field work. Student cost about \$10. Prerequisite: Botany 313, or GSA 303.

456-5 Plant Pathology. (Same as Plant Industries 455.) A study of plant diseases caused by fungi, bacteria, and viruses. Special attention given diseases of southern Illinois plants. Laboratory and field trips. Lab charge. Prerequisite: consent of instructor.

457-4 Forest Pathology. Nature and control of forest and shade tree diseases. A study of tree diseases in forests, parks, streets, and nurseries. Fungi important in decay and stain of timber and its products are included. Lab charge. Prerequisite: consent of instructor or 456.

470-4 Methods of Teaching High School Biology. Methods, objectives, types of courses taught in secondary school biology. Laboratory and field trips. Prerequisite: concentration in botany or zoology.

480-4 Classic Principles of Botany. Theories, principles, and developments in the various divisions of the plant sciences. Prerequisites: GSA 201c, or consent of instructor.

- 501-4 Plant Biology for High School Teachers.
- 502-2 Recent Developments in Biological Sciences.
- 503-15 (5,5,5) Advanced Angiosperm Taxonomy.
- 507-8 BSCS-High School Biology.
- 510-4 Bio-Ecology.
- 522-5 Advanced Microtechnique.
- 525-5 Cytology.
- 526-5 Cytogenetics.
- 533-3 to 4 Growth and Development in Plants.
- 535-3 Energetics of Aquatic Ecosystem.
- 542-3 Biosystematics.
- 543-5 Experimental Ecology.
- 551-4 The Natural Vegetation of the Mississippi Basin, Upland.
- 552-4 Mississippi Flora, Aquatic.
- 555-12 (4,4,4) Advanced Plant Pathology.
- 570-2 to 5 Readings.
- 580-1 to 4 Seminar.
- 581-4 Advanced Systematics.
- 590-2 to 4 Introduction to Research.
- 591-3 to 9 Research.
- 599-3 to 9 Thesis.
- 600-1 to 36 Dissertation.

Chemistry

- 110-4 General and Inorganic Chemistry. A brief introduction to the structure of the atom and chemical bonding; acids, bases, salts, and pH; and a study of the properties and reactions of some of the more common elements. Three lecture and 3 laboratory hours per week. Not applicable to a concentration or to a secondary concentration in chemistry. No prerequisite.
- 111-15 (5,5,5) General Chemistry and Qualitative Analysis. For students requiring at least 10 hours of chemistry including pre-professional students (medicine, etc.) and those with a concentration in chemistry or other scientific or technological areas. (a) Beginning course for students with less than one year of high school chemistry. (b) Beginning course for those students who have had a year or more of high school chemistry and the second course for those who complete 111a; the course covers general principles and the nonmetals. (c) Prerequisite: 111b. The course covers the metals, ionic equilibria and qualitative analysis of cations and anions.
- 235-5 General Quantitative Analysis. Introduction to theories and methods of volumetric and gravimetric techniques. Three lecture and 6 laboratory hours per week. Prerequisite: 111c.
- 240-4 Organic Chemistry. A survey course not open to those concentrating in chemistry. An introduction to aliphatic and aromatic compounds with emphasis on those of biological importance. Three lecture and 3 laboratory hours per week. Prerequisite: 110 or 111b.
- 305-9 (4,5) Organic Chemistry, Preprofessional. For secondary concentration in chemistry and preprofessional students. Lecture and laboratory. Must be taken in a,b sequence. Prerequisite: 111c.
- 341-15 (5,5,5) Organic Chemistry. Three lecture and 6 laboratory hours per week. Must be taken in a,b,c sequence. Prerequisite: 111c.
- 350-4 Biological Chemistry. A brief introduction to metabolism, nutrition, and the chemistry of the important biological processes in plants and animals. Three lecture and 3 laboratory hours per week. Prerequisite: 240 or 305b or 341c.
- 375-0 to 2 Senior Seminar. For seniors with a concentration in chemistry.
- 411-4 Intermediate Inorganic Chemistry. Modern inorganic chemistry involving atomic structure, chemical bonds, complexes, and chelate structures; with emphasis on physical chemical principles. Four lecture hours per week. Prerequisite: 461b.
- 412-3 Inorganic Preparations. A study of several important inorganic syntheses. One lecture and 6 laboratory hours per week. Prerequisites: 235, 305b or 341c.
- 432-8 (4,4) Instrumental Analytical Measurements. Theory and practice of instrumental analytical measurements, including spectrophotometric, electro-

- analytical, and chromatographic methods. Two lecture and 6 laboratory hours per week. May be taken in either sequence. Prerequisite: 461b.
- 433-3 Intermediate Quantitative Analysis.** A study of the analysis of complex materials, with emphasis on separations, functional group analysis, and instrumental applications. Two lecture and 3 laboratory hours per week. Prerequisites: 432a or b and 461c.
- 438-3 Review of Analytical Chemistry.** A discussion, in depth of the principles of chemical equilibrium, analytical separations, and common chemical and physical measurements. Three lecture hours per week. Prerequisite: graduate standing and consent of instructor.
- 444-3 Intermediate Organic Chemistry.** A review of fundamental principles and an introduction to advanced topics. Three lecture hours per week. Prerequisite: 341c.
- 446-4 Qualitative Organic Analysis.** A systematic study of the separation and identification of organic compounds. Two lecture and 6 laboratory hours per week. Prerequisite: 305b or 341c.
- 447-3 Quantitative Organic Chemistry.** The determination of functional groups and elements commonly found in organic compounds by selected methods of analysis; illustration of general methods of procedure in the field of quantitative organic chemistry. One lecture and 6 laboratory hours per week. Prerequisite: 305b or 341c.
- 451-9 to 11 (3, 3 to 4, 3 to 4) Biochemistry.** (a) Chemistry and function of amino acids, proteins, and carbohydrates. (b) Carbohydrate metabolism; lipid chemistry, function, and metabolism; energy relationships. (c) Amino acid metabolism; enzyme kinetics; nucleic acid function and biosynthesis. Three lecture hours per week; 3 hour laboratory optional. Prerequisite: 235, 305b or 341c. Must be taken in a, b, c sequence and each is a prerequisite for the next course in the sequence.
- 460-5 Theoretical Chemistry.** Traditional aspects of physical chemistry without the requirement of calculus. Three lecture and 4 laboratory hours per week. Prerequisites: 235, 305b or 341c, and one year of physics or consent of instructor.
- 461-12 (4,4,4) Physical Chemistry.** A fundamental course in physical chemistry composed of a sequence of a, b, and c. Three lecture and 3 laboratory hours per week. Prerequisites: 235 (concurrent), 341c, 12 hours of physics, and one year of calculus. Must be taken in a, b, c sequence, and each is a prerequisite for the next course in the sequence.
- 464-3 Intermediate Physical Chemistry.** Intermediate between the first year of undergraduate physical chemistry and advanced physical chemistry. Gives a broad foundation in physical chemistry. Three lectures per week. Prerequisite: 461c.
- 471-3 Industrial Chemistry.** A survey of modern industrial chemistry and an introduction to chemical research processes. Three lecture hours per week. Prerequisite: 305b or 341c.
- 472-12 (4,4,4) X-Ray Crystallography.** (Same as Applied Science 401-12.) (a) Introductory crystallography. (b) X-ray diffraction techniques. (c) Crystal structure analysis. Prerequisite: 461b.
- 490-2 Chemical Literature.** A description of the various sources of chemical information and the techniques for carrying out literature searches. Two lecture hours per week. Prerequisites: 235, 305b or 341c, reading knowledge of German or consent of instructor.
- 496-1 to 9 Chemical Problems.** Investigation of relatively simple problems under the direction of a staff member. Prerequisites: senior standing, concentration in chemistry with 4.0 grade point average, and consent of chairman.
- 511-9 (3,3,3) Advanced Inorganic Chemistry.**
- 517-3 Laboratory Techniques in Inorganic Chemistry.**
- 519-2 to 30 (2 to 6 per quarter) Advanced Topics in Inorganic Chemistry.**
- 531-3 Theory of Quantitative Analysis.**
- 532-3 Instrumental Methods of Analysis.**
- 539-2 to 30 (2 to 6 per quarter) Advanced Topics in Analytical Chemistry.**
- 541-3 Advanced Organic Chemistry.**
- 542-3 Advanced Organic Chemistry.**
- 543-3 Advanced Organic Chemistry.**
- 547-3 to 6 Advanced Laboratory Preparations in Organic Chemistry.**
- 549-2 to 30 (2 to 6 hours per quarter) Advanced Topics in Organic Chemistry.**
- 551-3 Advanced Biochemistry. (Protein Biosynthesis)**

- 552-3 Advanced Biochemistry. (Carbohydrate Chemistry)
- 553-3 Advanced Biochemistry. (Plant Biochemistry)
- 554-3 Biochemical Mechanisms.
- 555-3 Enzymes.
- 559-2 to 30 (2 to 6 hours per quarter) Advanced Topics in Biochemistry.
- 561-3 Chemical Thermodynamics.
- 562-3 Atomic and Molecular Structure.
- 563-3 Chemical Kinetics.
- 569-2 to 30 (2 to 6 hours per quarter) Advanced Topics in Physical Chemistry.
- 575 1 to 3 Graduate Seminar.
- 594-2 to 15 (2 to 6 hours per quarter) Special Readings in Chemistry.
- 595-0 to 9 Advanced Seminar in Chemistry.
- 596-3 to 20 Advanced Chemical Problems.
- 597-3 to 40 Research and Thesis.
- 598-3 to 48 Research-Doctoral.
- 600-3 to 48 Dissertation-Doctoral.

Clothing and Textiles

- 127-4 (2,2) Clothing Selection and Construction. (a) Clothing selection and care. Study of clothing in relation to fabric composition, fashion emphases, art principles, suitability and cost. (b) Clothing selection laboratory. Use and alteration of patterns, construction of garments using fabrics made of different fibers (emphases on fitting and on construction techniques).
- 131-3 Applied Design. Theory of design. Judging decorative and structural design of objects. Principles and elements of design applied to our visual environment—homes, furnishings, buildings—and the person. Supplementary laboratory experiences with emphasis on color.
- 135-3 Textiles. Selection of textiles from consumer standpoint. Characteristics of commonly used fibers and fabrics; textile information as a tool in the selection and care of household textiles and clothing.
- 145-1 to 4 Three Dimensional Arrangement. Principles of selection and arrangement of designs including flowers, foliage and other elements from nature for use in homes and other interiors.
- 231-3 Applied Design. The study of design of products used in interiors of homes and in clothing and textiles. Laboratory experiences in applying the principles and elements of design to two- and three-dimensional studies related to these. Prerequisite: 131, equivalent, or consent of instructor.
- 233-3 Pattern Designing and Clothing Construction. Principles of flat pattern design, pattern manipulation, and fitting. The making of dress patterns from master patterns. Construction of dresses using custom finishes. Field trip. Prerequisites: 127, 131, 135, or consent of instructor.
- 300-2 to 4 Display. The application of design principles in windows, cases, department displays. Laboratory problems to provide experience in planning, execution, and evaluation of display. Prerequisite: 131, equivalent, or consent of instructor.
- 322-3 Advanced Textiles. A study of textile testing, fabric analysis, textiles legislation. Prerequisite: 135, Chemistry 110 and 24D, or consent of instructor.
- 327-3 Home Furnishings and Interiors. Principles and elements of design related to selection and arrangement of furniture and the use of fabrics, accessories and other media utilized in furnishing homes and their interiors. Prerequisite: 131, equivalent, or consent of instructor.
- 329-3 Fashion. A study of economic, psychological, social, and aesthetic factors in fashion which affect the individual and family. Exploration into the fashion industry and opportunities in the field of fashion. Offered alternate years.
- 331-3 Applied Design. Laboratory experiences in applying the principles and elements of art to textile designing. Linoleum block printing, silk screen print, contemporary embroidery, batik, tie-dye, and others. Prerequisite: 231, equivalent, or consent of instructor. Offered alternate years.
- 334-3 Costume Design. The development of original dress design and adaptation from period costume and other sources, using various media. Prerequisite: 127a, 131. Offered alternate years.
- 339-3 Clothing Economics. Factors of production, distribution, and consumption which influence economics of clothing. Offered alternate years.

360-4 Tailoring and Clothing Construction. Fundamental construction processes reviewed and basic principles of tailoring applied in the construction of a suit or coat and a dress. Prerequisite: 233.

364-3 Draping and Construction. Principles of design applied to draping of fabric on dress form. Emphasis on interpretation of design in relation to different fabrics and figures. Construction of one draped garment. Prerequisite: 233. Offered alternate years.

371-6 Field Experience. Opportunity for supervised learning experiences in the chosen area.

380-4 Furniture and Interiors. A study of furniture in relation to interiors from antiquity through the 18th century. Field trip.

381-4 The Modern Movement in Interior Design. A study of furniture in relation to interiors from the 18th century to the present. Field trip.

382-4 The Decorative Arts. A study of ceramics, textiles, glass, paper, plastics, lighting and lighting fixtures, metals and hardware, selecting and hanging pictures, window treatments, floor coverings, wall treatments, and backgrounds considered in relation to problems in interior decoration. Field trip.

390-5 Interior Design Fundamentals. Analysis and practices of interior decoration with emphasis on present-day problems and solutions. Field trip. Prerequisite: 131, 231 or consent of instructor.

391-15 (5,5,5) Advanced Interior Design. The major problems and trends in interior design. (a) residential interiors, (b) commercial interiors for restaurants, hotels, and motels, (c) commercial interiors for transportation systems, industrial and governmental buildings. Lecture and laboratory. Field trips. Must be taken in a,b,c sequence. Prerequisite: 390 or consent of instructor.

394-4 Professional Practice. Practical organization and methods of conducting an interior decorating business; production, management, customer relationships, and professional ethics. Prerequisite: 390 or consent of instructor.

395-2 to 8 Special Problems. Specific problems in clothing, textiles, applied design, housing, home furnishings, or interiors. Prerequisite: consent of instructor.

423-4 Advanced Family Housing. (See Home and Family 423.)

431-4 Advanced Applied Design. Research problems in experimentation with materials in textile design, linoleum block printing, stencilling, contemporary embroidery, silk-screen printing, etc. Prerequisite: 231 or consent of instructor.

432-2 to 8 Workshop. Designed to aid leaders in the field with current problems. Discussion, reports, lectures, and other methods of analyzing and working on solutions to problems. Emphasis for the workshop to be stated in the announcement of the course. Prerequisite: consent of chairman.

433-4 Advanced Pattern Designing. Experimentation in the application of flat pattern design principles to the making of patterns for garments of various designs. Emphasis upon suitability of patterns for specific fabrics. Construction of garment as final step in experimentation. Prerequisite: 233 or consent of instructor.

434-4 History of Costume. The history of costume from prehistoric times to the present. Social, economic, and aesthetic developments that influenced its design.

461-4 Problems in Fitting and Pattern Alterations. Principles of fitting and pattern alterations as related to various figure types and special figure problems. Application made by fitting and constructing a garment. Prerequisites: 127, 233 or equivalent.

470-3 Interior Design Seminar. A study and appraisalment of noted interiors and architecture as interpreted in selected buildings and by selected designers. Field trips. Prerequisite: consent of instructor.

473-4 Advanced Tailoring. The student will tailor one garment for herself. Timesaving methods, high-quality construction details, and professional finishes stressed. Prerequisite: 360 or equivalent. Offered on demand.

474-4 Advanced Textiles. The physical and chemical analysis of textiles. Problems dealing with economic and industrial developments, standards, labeling, and legislation. Current literature of developments within the field. Prerequisites: 322, Chemistry 110 and 240 or consent of instructor.

481-2 to 6 Readings. Supervised readings for qualified students. Prerequisite: consent of instructor and chairman.

528-4 Recent Developments in Clothing and Textiles.

570-4 Clothing and Textiles Seminar.

571-4 Recent Research.

- 572-2 to 8 Special Problems.
- 582-4 Foundations of Fashion.
- 599-5 to 9 Thesis.
- 600-1 to 48 Dissertation.

Design

- 100-5 to 15 Design Fundamentals. Three-quarter sequence. Comprehensive workshop and lecture course in design fundamentals. Exploration of two- and three-dimensional design principles using various media and materials.
- 200-2 to 6 Materials and Basic Techniques. Three-quarter sequence. Laboratory exploration of two- and three-dimensional materials utilized in design process. No more than 2 hours per quarter. Prerequisite: 100.
- 215-4 to 12 Basic Product-Shelter Design. Three-quarter sequence. Development of an analytical approach to the solution of product and shelter problems, using lecture, text, and laboratory methods. Prerequisite: 100.
- 275-4 to 12 Basic Visual Design. Three-quarter sequence. Development of an analytical approach to the solution of visual problems, using lecture, text, and laboratory methods. Prerequisite: 100.
- 300-2 to 6 Materials and Basic Techniques. Three-quarter sequence. A continuation of 200. Prerequisite: 200.
- 345-4 to 12 Design Studio. Special projects in two, and three-dimensional experimental structures.
- 366-5 to 15 Product-Shelter Design. Three-quarter sequence. Development of three-dimensional design projects of community scope. Prerequisites: 200, 215, 275.
- 375-5 to 15 Visual Design. Development of design projects exploiting various communications media. Prerequisites: 200, 215, 275.
- 390-2 Principles of Design. Critical survey of the theory and practice of contemporary design.
- 400-0 to 2 Materials and Basic Techniques.
- 465f-5 to 15-Research in Product-Shelter Design.
- 465g-5 to 15 Research in Visual Design.
- 490f-2 to 12 Studio in Product-Shelter Design.
- 490g-2 to 12 Studio in Visual Design.
- 520-4 to 10 Educational Tool Systems.
- 530-4 to 12 Studies in the Industrial Process.
- 535-4 to 12 Research in Product Design.
- 540-4 to 12 Studies in Communications Design.
- 545-4 to 12 Research in Communications Design.
- 550-2 to 16 Field Study in Design.
- 560-4 to 12 Environmental Control.
- 570-4 to 12 Design Science Exploration.
- 575-4 World Ecological Studies.
- 576-4 to 8 Structural Evolution.
- 599-3 to 9 Thesis.

Economics

- 214-3 Economics (Macro). Explores more fully some of the topics introduced in GSB 211a and brings in others such as: national income; money & banking; economic fluctuations; government fiscal policy; economic growth. Prerequisite: GSB 211a.
- 215-3 Economics (Micro). Explores more fully some of the topics introduced in GSB 211a and brings in others such as: supply, demand, prices, theory of the firm, labor, rent, interest, profits. Prerequisite: GSB 211a.
- 301-1 to 6 Economic Readings. Readings in books and periodicals in a defined field, under direction of one or more staff members. Periodic written and oral reports. Prerequisite: consent of chairman.
- 303-4 Introduction to Economics-MBA. Survey of economic principles including national income, money and banking, fiscal policy, economic growth, prices, theory of the firm, labor, rent, interest, and profits. Restricted to MBA students.
- 304-4 Introduction to Statistics-MBA. A survey of statistics. Specifically,

- hypotheses testing and confidence interval determination. Three hours lecture; 2 hours laboratory. Restricted to MBA students.
- 308-4 Economics and Business Statistics I.** Three hours lecture; 2 hours laboratory. Prerequisite: GSD 110.
- 310-4 Labor Problems.** Prerequisites: 214, 215.
- GSB 311-3 Economic Development of the United States.** Prerequisite: GSB 101c or 211c.
- GSB 312-3 Comparative Economic Systems.** Prerequisite: GSB 211a.
- GSB 313-3 Economics of War and Peace.**
- 315-4 Money and Banking I.** Prerequisite: 206 or 214.
- 330-4 Public Finance.** Prerequisite: 214 or GSB 211c.
- GSB 333-3 Seminar in Problems of War and Peace.**
- 408-4 Economic and Business Statistics II.** Techniques for making decisions when the economic conditions are not known with certainty. Three hours lecture; 2 hours laboratory. Prerequisite: 307 or GSD 110, or GSD 108c, or GSD 114c, or consent of instructor.
- 411-4 Collective Bargaining and Dispute Settlement.** Nature, issues, procedures, economic effects. Prerequisite: 310 or consent of instructor.
- 416-4 Money and Banking II.** Emphasis upon the Federal Reserve System and other banking systems. Prerequisite: 315 or consent of instructor.
- 418-4 Economic History of Europe.** A survey of the economic growth of Europe with emphasis upon the development of European agriculture, industry, finance, and international trade since 1750. Prerequisites: 205 or GSB 211a, or consent of instructor.
- 419-4 Latin American Economic Development.** A survey of the resource base of Latin American economic development with special reference to the problems of transition from an export-import to an integrated industrial economy; monetary policies; problems of economic planning. Prerequisites: 205 or GSB 211a.
- 420-4 Recent Economic History of the United States.** Review and analysis of the chief characteristics, trends, and continuing problems of the economy of the United States in the 20th century. Prerequisites: 214, 215.
- 422-4 Introduction to Economic Development.** An analysis of the preconditions, processes, and problems involved in economic development. Both the theory and policy relevant to development, with special emphasis upon the developing or emerging economies, are stressed. Prerequisites: 214, 215.
- 429-4 International Economics.** Intensive treatment of the principles of international economics with special emphasis on the classical and modern theories of international trade. Income effects. Balance of payments adjustments. Prerequisites: 214 and 215, or consent of instructor.
- 430-4 Regional Economy.** Natural economic regions, governmental action (as in the T.V.A.), local applications. Prerequisites: 214 and 215.
- 431-3 Public Finance II.** State and local. Prerequisite: 330 or consent of the instructor.
- 433-4 Inflation, Growth, and Stability.** National income theory with emphasis on (a) the influence of government budgetary programs on the level of national income, employment, growth, and the price level, and (b) the institutional difficulties of formulating and executing a Federal budget program. Prerequisite: 214 or consent of instructor. A student may not receive credit for both 433 and 441.
- 436-3 Government and Labor.** (Same as Government 436.) A study of labor relations and legislation considering both constitutional and economic aspects. Prerequisite: 215, or consent of instructor.
- 440-4 Intermediate Micro Theory.** A more intensive treatment of price and income theory. Prerequisites: 205 and 206, or 215, or consent of instructor.
- 441-4 Intermediate Macro Theory.** Basic analytical concepts of the modern theory of aggregative income determination. Prerequisites: 214 or consent of instructor.
- 450-6 (3,3) History of Economic Thought.** The development of economic thought; (a) ancients to 1850; (b) 1850 to present. Must be taken in a,b, sequence. Prerequisites: 214 and 215, or consent of instructor.
- 460-4 Russian Economy.** Development of Russian trade, agriculture, industry, government, finance, and standards of living in successive periods in relation to the historical, geographic, economic, and ideological background. Prerequisite: GSB 211a, or consent of instructor.
- 461-4 Comparative Economic Development in Asia.** A comparison of the

economies of Japan, India, and China within the framework of emerging economic theory of developing economies. Prerequisite: GSB 211a, or consent of instructor.

462-4 Economic Development of the Middle East. Economic structure of the countries constituting the Middle East; economic, political, social, and cultural forces influencing economic development. Prerequisites: 214, 215.

465-4 Mathematical Economics I. A systematic survey of mathematical economic theory. Conditions of static equilibrium (including stability conditions), optimizing behavior under constraints, and dynamic economic models. Prerequisite: 440 or consent of instructor.

467-4 Econometrics I. Introduction to resource allocation under uncertainty. Probabilistic economic models, theory of games and economic choices, and stochastic economic processes. Prerequisite: consent of instructor.

471-4 Land Resource Economics. (Same as Forestry 471 and Agricultural Industries 471.) The use of land as an economic variable in production of goods and services; land market; group versus individual conflicts; elementary land resources planning techniques. Prerequisite: 440, or 441, or Agricultural Industries 350, or Forestry 470.

472-4 Dynamic Economics: Fluctuations and Growth. A study of the causal factors which produce fluctuations in economic activity and/or economic growth. An identification of the factors which affect the length of the cycle, its amplitude, and the stability of equilibrium. An examination of the theories and issues of economic growth. Prerequisite: 441 or consent of instructor.

481-4 Comparative Economic Systems. Capitalism, socialism, fascism, and other forms of the economy. Prerequisite: 214 and 215, or consent of instructor.

490-4 Workshop in Economic Education. (Same as Elementary or Secondary Education 490.) Designed to assist elementary and secondary school teachers in promoting economic understanding in the minds of their students through the translation of economic principles and problems into classroom teaching materials.

500-4 to 8 Economics Seminar.

501-1 to 5 Economics Readings.

502-1 to 6 Readings in Resource Economics.

512-4 Labor Economics.

517-4 Monetary Theory and Policy.

520-8 (4,4) Economic Development Theory and Policy.

526-4 Managerial Economics.

530-4 Foreign Trade and Finance.

531-4 Seminar in International Economics.

533-4 Public Finance Theory and Practice.

541-4 National Income Theory.

542-4 Price Theory.

543-4 Seminar in Economic Policy.

552-4 Seminar in Economic Thought.

562-4 Seminar in Economic Systems.

566-4 Mathematical Economics II.

575-4 Economic Regulation.

581-4 Economics of Welfare.

582-0 to 4 Economic Behavior.

583-4 Methodological Foundations of Economics.

599-2 to 9 Thesis.

600-3 to 48 Doctoral Dissertation.

Educational Administration and Supervision

Students who wish to take 420, 424, 434, 456, 460, 500, 527, 533, 534a,b, 535, 539 and 556 need approval by the Department of Educational Administration and Supervision prior to program approval.

GSB 331-3 The American Educational Systems.

355-4 Philosophy of Education. (Same as Philosophy 355.) The philosophical principles of education and the educational theories and agencies involved in the work of the schools.

420-4 Legal Basis of American Education. Particular emphasis is placed on common-law principles.

- 424-4 School Administration.** Designed primarily for those who look forward to positions as supervisors, principals, or superintendents.
- 431-4 History of Education in the United States.** An historical study of the problems of American Education which have relevance to contemporary education.
- 432-4 Education and Social Forces.** Analysis and classification of propaganda. Designed to show how public opinion is formed by a use of current materials from the different channels of communications. Differences between propaganda and indoctrination.
- 456-4 School Supervision.** The function of the principal or supervisor in the improvement of instruction. Some activities, methods, and devices for improving the effectiveness of teaching.
- 460-4 Curriculum.** Modern practices and procedures in curriculum development, with attention to the professional, social, economic, and other major factors in curriculum planning.
- 485-4 to 9 Educational Utilization of Community Resources.** A workshop providing an opportunity for teachers to acquire a detailed knowledge of community resources, construct teaching units utilizing these resources and assemble files of resource materials dealing with economic and social problems of the community.
- 500-4 Research Methods.**
- 501-12 (4,4,4) Seminar in Educational Administration.**
- 502-4 Seminar in Comparative Education.**
- 502S-4 Seminar in Comparative Education: Soviet Russia.**
- 503-0 to 4 Seminar in Philosophy of Education.**
- 504-4 Seminar in History of European Education.**
- 506-4 Seminar: Curriculum in Relation to American Culture.**
- 507-12 (4,4,4) The Twentieth Century and Education.**
- 508-8 (4,4) Interdisciplinary Seminar in Education Administration.**
- 511-12 (4,4,4) Internship Practicum.**
- 512-3 Workshop in Adult Education.**
- 520-4 Illinois School Law.**
- 527-4 to 6 Administrative Problems of Small Schools.**
- 533-4 School Buildings.**
- 534a-4 School Finance.**
- 534b-4 School Business Administration.**
- 535-4 Research in Problems of School Administration.**
- 536a-4 Administrator's Workshop.**
- 539-4 Community Development Through the School.**
- 554-4 Contrasting Philosophies of Education.**
- 556-4 Seminar in Educational Supervision.**
- 563-4 Workshop in School Public Relations.**
- 564-4 High School Principalship.**
- 575-1 to 4 Individual Research.** (Selected areas with 1 to 4 hours in each.)
- 576-1 to 4 Readings in Administration and Supervision.** (Selected areas with 1 to 4 hours in each.)
- 589-2 to 12 General Graduate Seminar.**
- 591-2 Seminar-Social and Philosophical Foundations.**
- 592-4 Doctoral Seminar in Cultural Foundations of Education.**
- 596-5 to 9 Independent Investigation.**
- 597-1 to 3, 598-1 to 3, 599-1 to 3 Thesis.**
- 600-1 to 48 Dissertation.**

Elementary Education

- 000-0 Reading and Study Techniques.** A service course to aid students in improving reading and study skills. Time schedules, general principles of effective study, improving reading, making notes, etc.
- 100-3 Introduction to Elementary Education.** A thorough investigation of the factors which are involved in teaching in the elementary school.
- 101-2 Developing Reading and Learning Skills.** Designed to increase reading and study efficiency. Areas covered include speed, comprehension, vocabulary, study skills, (concentration, note-taking, test-taking, time-scheduling, etc.). Open to all students.

- 203-3 Understanding the Elementary School Child.** Concepts needed to understand the child in the elementary school situation. Two hours lecture and two hours observation. Prerequisite: GSB 201c.
- 309-3 Kindergarten-Primary Social Studies Methods.** The objectives and methods of teaching social studies at the kindergarten-primary level, culminating in the planning of a unit of work. Prerequisite: 316.
- 314-4 Elementary School Methods.** The fundamental principles of education, the interpretation of current educational theory and practice, the processes of teaching and learning involved in elementary education. Prerequisite: Guidance 305.
- 316-4 Kindergarten-Primary Methods and Curriculum.** Philosophy and principles underlying the teaching of four-to-eight-year-olds. Emphasis upon organization, equipment, materials and methods for promoting growth of young children. Prerequisite: Guidance 305.
- 337-4 Reading in the Elementary Schools.** The principles of reading, factors that condition reading, together with grade placement of aims and materials; diagnostic and remedial treatment. Prerequisite: 314.
- 350-4 to 16 Kindergarten-Primary Student Teaching.**
- 351-4 to 16 Elementary Student Teaching.**
- 375-2 to 3 Readings in Elementary Education.**
- 401-2 to 4 Problems in Public School Reading.** Requirements: attendance at all sessions of a reading conference; preparation of a paper showing practical applications of theory to the student's own teaching situation. Summer.
- 402-4 Aerospace Education Workshop.** (See Secondary Education 402.)
- 410-4 Improvement of Instruction in Arithmetic in Kindergarten-Primary Grades.** Recent findings and current practices in building a basis for quantitative thinking in early childhood education. Special emphasis upon grade placement of content and of techniques to aid children in understanding of the number system.
- 411-4 Seminar in Instruction.** To assist student teachers and in-service teachers in solving classroom problems. Involves clinical study and discussion of behavioral and learning situations, with special attention to the development of characteristics and needs of students.
- 413-4 Children's Literature.** Emphasizes types of literature, analysis of literary qualities, selection and presentation of literature for children. Not for students who have had English 213. Prerequisite: Guidance 305.
- 415-2 to 4 Improvement of Instruction in Arithmetic in the Elementary School.** Items to be taught, the grade placement of content, newer instructional practices and materials of instruction, and means of evaluating achievement. Prerequisite: consent of instructor.
- 430-3 Workshop in Creative Writing in the Elementary School.** Techniques of encouraging creative writing in the elementary school.
- 431-2 to 4 Education for the Disadvantaged Child.** An understanding of culturally disadvantaged children with emphasis on the nonurban poor. Discussion of necessary adjustments of school programs emphasizing early school admission, experimental background, self-concept, language development and learning style. Prerequisite: 337.
- 433-4 Workshop in Kindergarten-Primary Education.** Meets needs of in-service teachers in such areas as curriculum adjustment, remedial teaching, child development, and early childhood education. No credit if student has had 333 or 390.
- 435-4 to 8 Workshop in Elementary School Foreign Language Instruction.** Designed to assist elementary school teachers in integrating foreign languages into their teaching program as well as to encourage high school teachers to introduce or supervise foreign languages or education. Prerequisite: basic language credit.
- 437-4 Problems in Reading.** Practices and trends in the teaching of reading; materials of instruction in reading, particularly remedial materials; techniques and materials for prevention of reading difficulties; diagnosis and remediation of reading difficulties. Prerequisites: senior standing, 337. Not open to students having had 505.
- 441-4 Teaching Elementary Science.** A workshop course for teachers of elementary school science.
- 442-4 Science for the Elementary Teacher.** Study of content and methods of elementary school science.
- 443-4 Workshop in Social Studies.** Material on critical areas of the world,

not commonly emphasized in elementary social studies. Areas considered; significant geographical concepts, Asia, Africa, Russia, and Eastern Europe. Outstanding specialists in social science present their specialties.

465-4 Seminar in Psychology of Elementary School Subjects. Psychological principles of learning applied to the mastery of materials used in elementary school subjects. Prerequisites: 314, Guidance 305.

490-2 to 3 Workshop in Economic Education in Elementary Schools. A study of newer programs stressing economic understandings of the social studies in the elementary school.

503-9 NDEA Summer Institute in Reading.

505-4 Reading in Elementary School.

507-2 to 4 Readings in Reading.

509-4 to 8 Practicum in Reading.

510-4 to 8 Seminar: Problems in Reading.

514-4 Organization and Administration of Reading Programs.

515-4 Special Problems in the Teaching of Arithmetic in the Elementary School.

516-8 to 12 Internship in Reading.

517-2 to 4 Kindergarten-Primary Practicum.

518-2 Supervision of Student Teachers.

519-2 to 4 Readings in Research in Elementary Mathematics.

520-4 Diagnosis and Correction of Elementary Mathematics Disabilities.

521-12 (4,4,4) Diagnosis and Correction of Reading Disabilities.

525-4 Kindergarten-Primary Seminar.

537-4 Kindergarten-Primary Reading.

541-4 Selected Teaching Curriculum Problems in Elementary School Science.

542-3 to 4 Language Arts in the Elementary School.

543-4 Teaching the Social Studies in the Elementary School.

557-4 The Elementary Principalism.

558-3 to 4 Leadership in Elementary Education.

559-3 Workshop in Instructional Leadership.

560-4 Kindergarten-Primary Education.

561-4 The Elementary School Curriculum.

563-4 Organization of the Elementary School.

570-4 Seminar, Research in Elementary Education.

575-2 to 4 Individual Research. (Selected areas with 2 to 4 hours in each.)

596-5 to 9 Independent Investigation.

599-3 to 9 Thesis.

600-1 to 48 Dissertation.

Engineering

222-3 Digital Computer Programming for Engineers. Programming of digital computers in a problem-oriented language (FORTRAN). Problems solved will illustrate some of the elementary methods of numerical analysis. Prepares the student to use digital computers in later courses. Includes programming of a computational problem from inception to completion: formulation and analysis, flow charting, coding, check-out, documentation. Prerequisite: Mathematics 111b.

260-9 (3,3,3) Analytical Mechanics. (a) Principles of mechanics; force systems; statics of particles; statics of rigid bodies in two dimensions and three dimensions; equilibrium; analysis of structures; distributed forces; forces in beams and cables. Prerequisite: Mathematics 150b or concurrent enrollment. (b) Centroids and center of gravity; friction; moments of inertia; kinematics of particles; kinematics of rigid bodies; relative motion. Prerequisite: Engineering 260a. (c) Kinetics of particles; Newton's laws of motion (mass, force and acceleration); kinetics of rigid bodies; D'Alembert principle; work and energy; impulse and momentum. Prerequisite: Engineering 260b.

300-9 (3,3,3) Thermodynamics. (a) The study of fundamental energy concepts and the laws of thermodynamics, availability of energy, properties of gases, vapors and gas-vapor mixtures, flow and nonflow processes. (b) Engine cycles and applications to internal combustion engines, gas turbines, steam turbines, jet devices, air compressors and air engines. Combustion refrigeration and air conditioning. (c) Axiomatic thermodynamics, criteria for equilibrium; absolute temperature; Maxwell's relations; open systems; the phase

rule; systems of one and two components; idealized systems; equations of state; systems involving chemical and electrochemical equilibrium. Must be taken in a,b,c sequence. Prerequisite: Mathematics 252a.

302-6 (3,3) Heat and Mass Transfer. (a) Dimensional analysis and its application to the theory of heat transfer. Mathematical and graphical methods of analyzing problems in conduction, convection, and radiation. Particular attention to the applications of heat transfer principles used in various processes. (b) A study of the theory related to all types of heat power equipment. The design calculations for various components of heat power machines such as steam and gas turbines, air compressors, pumps, refrigeration, and air conditioning equipment. Must be taken in a,b, sequence. Prerequisite: 300a,b.

305-12 (3,3,3,3) Architectural Engineering Design. (a) An introduction to the profession of architecture; work illustrating basic architectural forms and their organization. (b) A study of architectural planning, composition, and sketching. (c) A study of the fundamentals of architectural design. (d) A study of architectural planning of contemporary architectural problems. Must be taken in a,b,c,d sequence. Prerequisite: 260-9.

311-9 (3,3,3) Engineering Materials. (a) Stress and strain in the elastic as well as the plastic states. Failure theories. Elastic and plastic torsion. Thick cylinders and rotating discs. Energy methods. Beams on elastic foundations. Introduction to plates and shells. Limit design. (b) Mechanics of continua for elastic, plastic, viscoelastic, and creeping materials, limit analysis, applications to brittle, ductile, and transitional modes of fracture, to creep, fatigue, friction and wear. Laboratory emphasizing student-planned projects. (c) Physical and chemical properties of all types of materials; influence of these properties on behavior of materials under various structural, magnetic, dielectric, heat, and other environmental conditions. Laboratory. Must be taken in a,b,c sequence. Prerequisite: 260-9.

313-6 (3,3,) Fluid Mechanics. (a) A broad introduction to the concepts and principles of fluid statics, kinematics and dynamics using the continuum as a mathematical model. Differential and integral form of the basic law of conservation of mass, Newton's law of motion in the form of Euler's, Bernoulli's and the momentum equation; the basic law of conservation of energy. Laminar and turbulent pipe flow; open channel flow. Turbomachinery. Fluid property measurement. Prerequisite: 260-9. (b) Resistance to flow around submerged bodies, basic boundary layer theory. Dimensional analysis by means of the Buckingham Pi-theorem and the method of non-dimensionalizing the governing equations, dynamic similitude. Perfect gas equations, basic theories of compressible flow in short passages and pipes; shock waves. Inviscid flow concepts including the velocity potential. Must be taken in a,b sequence.

321-9 (3,3,3) Physical Metallurgy. (a) The elementary physics of metals, constitutional diagrams, equilibrium and non-equilibrium conditions. The properties of metals and alloys as related to structure. (b) A study of the internal structure, treatment, and properties of iron, plain carbon steel, and cast iron. (c) Properties of x-rays and x-ray diffraction; the structure of polycrystalline aggregates of alloys; precise lattice-parameter measurements; chemical analysis by x-rays; measurement of grain sizes; pole figures and orientation determinations; determination of phase diagrams with x-rays; superlattices; the structure of cold-worked metal and preferred orientations resulting from cold work and after annealing; orientations in castings and deposited films. Laboratory. Must be taken in a,b,c sequence. Prerequisite: 311a.

331-12 (4,4,4) Circuit and Field Theory. (a) Explanation and application of circuit theory; measurement of basic electrical parameters; study of linear networks and sources of electrical energy; analysis of transients in reactive circuits. (b) Continuation of circuit theory; introduction to three-phase power systems; investigation of quadripole network theory. (c) Vector analysis of electromagnetic fields of simple geometry; study of various theorems and equations relating to electromagnetic field theory, with special emphasis on Maxwell's equations. Prerequisite: Mathematics 252b.

333-9 (3,3,3) Electrical Energy Conversion. (a) The principles and physical aspects of electromechanical energy conversion and the basic concepts of machine performance; analysis and performance of D.C. machines. (b) Basic theory of transformers, analysis of performance of synchronous and induction machines. (c) Analysis of performance of fractional-horsepower motors, control-type generators and self-synchronous machines, dynamics of electro-mechanically-coupled systems, magneto-hydrodynamics, and other energy

- conversion methods. Laboratory. Must be taken in a,b,c sequence. Prerequisite: 331a,b.
- 334-9 (3,3,3) Microwave and Antenna Theory.** An advanced study of electromagnetic fields, a study of the modes of propagation of electromagnetic energy of short wave length through guided ducts and the radiation of this energy into space. Laboratory. Must be taken in a,b,c sequence. Prerequisite: 331-12.
- 344-9 (3,3,3) Structures.** (a) Analysis of statically determinate beams, trusses, arches, spaceframes, and cables. Deflection of structures. Introduction to statically indeterminate structures. (b) Methods of analysis of statically indeterminate structures. (c) Introduction to structural design. Economic and social factors. Advantages and disadvantages of various structural materials. Assumptions and limitations of design procedures. Must be taken in a,b,c sequence. Prerequisite: 311a.
- 346-6 (3,3) Concepts of Energy Release.** (a) A study of various energy conversion principles. The theory and application of energy release to conventional devices. (b) Thermodynamics analysis of low temperature phenomena. Solar energy and the concepts of thermonuclear power. Must be taken in a,b sequence. Prerequisite: 300-9.
- 350-6 (3,3) Analog and Digital Computer Design.** An introduction to the design of analog and digital computers. Subjects include: operational amplifiers, multiplying circuits, regulated power supplies, Boolean algebra, switching circuits, memory devices. Not a course in programming. Must be taken in a,b sequence. Prerequisites: 335, Mathematics 305a or Engineering 470a or concurrent enrollment.
- 351-6 (3,3) Electromechanical Design.** Develops and makes use of the mechanical and electrical knowledge of the student in the synthesis of complete control systems, to train students for careers in creative automation. Must be taken in a,b sequence. Prerequisite: 435a.
- 352-6 (3,3) Electronic Device Design.** (a) Helps students use the latest electronic devices in designing circuits and equipment. (b) The use of tunnel diodes, lasers, masers, traveling wave tubes in the design of equipment. Emphasis will be on total design concept. Laboratory. Must be taken in a,b sequence. Prerequisite: 435a,b.
- 370-4 Theory of Stochastic Processes.** Concept of a stochastic process. Renewal theory. Markov processes with application to reliability of systems, queues, and other problems of engineering interest. Related statistical problems. Prerequisite: 300a,b.
- 401-9 (3,3,3) Principles of Propulsion.** (a) The basic principles of propulsion dynamics. (b) The thermodynamics of fluid flow and application to propulsion engines. (c) An extensive treatment of the technological problems in the design of propulsion systems. Must be taken in a,b,c sequence. Prerequisite: 300-9.
- 406-3 Introductory Wave Motion.** Wave motion in strings and bars. Fourier methods. Wave motion in fluids. Electromagnetic waves. Prerequisite: Mathematics 252b.
- 412-9 (3,3,3) Engineering Practice.** (a) Written communication encountered in engineering organizations; correspondence, memoranda, technical papers, specifications, and reports. Lectures, conferences, and frequent written assignments are adapted to the individual needs of each student. (b) The law of contracts with enough emphasis on legal procedure to enable students to understand decided cases. The study of the legal material will be followed by practice in applying some of the principles. (c) Research methods.
- 413-6 (3,3) Intermediate Mechanics of Fluids.** (a) Application of the basic laws of nature to the theory of fluids using the continuum approach. Kinematics of fluid motion using various coordinate systems. Dynamics of viscous fluid motion with some solutions to the fundamental system of equations. (b) Vorticity, stream functions and the velocity potential. Incompressible irrotational flow. The compressible flow equations and an introduction to the theory of homogeneous turbulence. Must be taken in a,b sequence. Prerequisite: 313a,b, Mathematics 305 or Engineering 470a.
- 415-9 (3,3,3) Principles of Water Quality Control.** (a) Characteristics of water quality, both natural and man-made; relationship of quality to use; unit operations of water quality control for municipal and industrial use. (b) Characteristics of waste waters; fundamental concepts of biological and chemical processes for the treatment of sewage and industrial wastes; water quality

criteria in stream pollution control. (c) Application of physical, chemical and biological unit operations and unit processes to the functional design of treatment facilities for water, sewage and industrial wastes. Laboratory. Prerequisites: Chemistry 111c, consent of instructor.

416-6 (3,3) Water Quality Control. (a) Application of the principles of analytical, physical, and organic chemistry to the analysis and treatment of water, sewage, and industrial wastes. Laboratory. Prerequisite: Chemistry 111c, consent of instructor. (b) The ecology of streams, lakes, and other water resources; identification and control of microorganisms in water and wastes; basic principles of microbiology and biochemistry as related to stream pollution and water quality control. Laboratory. Prerequisite: Engineering 416a, consent of instructor.

420-9 (3,3,3) Transport Phenomena. (a) Mechanism of heat, mass and momentum transport on both molecular and continuum basis. Estimation of transport properties. Generalized equations of transport in one or three dimensional system. (b) Interphase transport in isothermal and nonisothermal systems. Unsteady state transport problems in multicomponent systems. Mechanism ratio analysis. Analogy of mass, heat and momentum transfer. (c) Macroscopic balances, diffusion operations, penetration theory, simultaneous mass and heat transfer, equilibrium operations. Prerequisite: Mathematics 252b.

422-4 Operations Research and Mathematical Model Formulation. Applications of digital computers to the mathematical modelling of physical systems with particular emphasis on the simulation and problem solving techniques of operations research. A critical study of "the scientific method" and its implications as an aid to the conduct of scientific research. Dynamic models of transportation, allocation, and replacement. Physical applications and computation techniques related to the theory of games. Introduction to "real-time" techniques. Prerequisites: 222 and Mathematics 111b or consent of instructor.

423-3 Hybrid Computation. The simultaneous use of the analog and the digital computer for the solution of engineering problems. Scaling of problems. Block diagrams and logic are stressed. Linear and nonlinear differential equations. Simulation as well as iterative analog computation are covered. Prerequisite: Engineering 222 or Mathematics 225 and Engineering 470a or concurrent enrollment.

425-2 to 8 Practicum in Technology. Experiences in the industrial applications of technological knowledge. Cooperative arrangements with selected corporations and professional organizations provide opportunity to study technical problems in the industrial environment under the direction of specialists. Prerequisite: 12 hours in technical subjects.

430-2 to 8 Special Problems in Industry and Technology. Special opportunity for students to obtain assistance and guidance in the investigation and solution of selected technical problems. Prerequisite: consent of instructor.

435-9 (3,3,3) Electronics. (a) An introduction to electronics for all students of engineering. A foundation for more advanced studies in electronics. (b,c) Electron-tube theory, amplifiers, modulation, vacuum tube and transistor circuits. Laboratory. Must be taken in a,b,c sequence. Prerequisite: 331a,b.

439-6 (3,3) Transient Analysis. A study of electrical and mechanical networks by means of the Laplace Transform. Theoretical vibration problems in the real and complex time domain, as they apply to engineering will be discussed. Prerequisites: 335a,b, Mathematics 305b or Engineering 470b.

441-3 Wave Motion. Wave motion in solids. Seismic waves. Reflection and refraction. Dispersion. Examples. Prerequisite: Mathematics 252b.

443-9 (3,3,3) Engineering Design. Projects of a research design or development nature. The student will select a problem, develop the theory for a solution, check the theory experimentally, analyze the data, and compare the results. The project can be from one to three quarters in length. Laboratory. Must be taken in a,b,c sequence. Prerequisites: 300, 311, 331 (a,b).

445-12 (3,3,3,3) Solid Mechanics. (a) Triaxial stress fields. Strain-displacement relations in nonrectangular coordinates. Deviatoric stress and deviatoric strain. Mises and Prandtl-Reuss equations in plasticity. Yield conditions. (b) Voigt, Maxwell and Standard viscoelastic solids. Theory of equivalent elastic problems, Examples. (c) Equations of motion for free and forced motion of mechanical-electrical systems. Several degrees of freedom. Complex

variable methods. Translation and rotation. (d) Lagrangian equations. Damping. Energy methods. Numerical methods. Examples. Prerequisites: Engineering 311a,b, Mathematics 252b.

446-9 (3,3,3) Energy Conversion. (a) Modern power plant cycles, pumps, fans, and heat exchangers. (b) a detailed study of the design and operation of turbines. (c) The design of jet engines and other systems. Must be taken in a,b,c sequence. Prerequisite: 300-9.

450-4 Fundamentals of Reactive Systems. Chemical processes, stoichiometry, properties of gases, solution chemistry, modern techniques of analysis, surface chemistry. Nonideal systems, rates and mechanisms of industrial processes. Instrumentation and process control. Laboratory. Prerequisites: Chemistry 111b,c and one year of calculus or consent of instructor.

459-4 Engineering Economy II. An analytic approach to economic aspects of professional engineering practice. Fundamental techniques of economy studies including replacement theory, cost control, analysis of risk and uncertainty, income taxes, and methods and formulas employed by industry. Prerequisite: GSB 361 or consent of instructor.

460-8 (4,4) Engineering Analysis for Decision Making. (a) Introduction to fundamental concepts and theorems of engineering analysis with emphasis on the theory of linear, dynamic, and integer programming. Network analysis, inventory theory, simplex and revised simplex method, and dual theorem. Prerequisites: Mathematics 252b, GSB 361 or consent of instructor. (b) Introduction to advanced linear programming, nonlinear, probabilistic, and stochastic programming. Prerequisites: 460a, 370 or consent of instructor.

461-6 (3,3) Energy Methods in Elasticity. (a) Energy concepts in mechanics. Beam and rods. Trusses. Redundancy. Bents. Castigliano's principle. (b) Method of calculus of variations. Buckling theory. Elementary vibrations. Hamilton's principle. Equations of Lagrange and Hamilton. Prerequisites: 260-9, 311a.

462-6 (3,3) Matrix Methods in Structural Analysis. (a) Introduction to matrix algebra. Matrix force method. Stiffness matrix method. Matrix displacement method. Computer analysis of trusses and frames. Moment distribution. (b) Introduction to undamped and damped vibrations. State and transfer matrices in vibration analysis. Miscellaneous applications. Prerequisites: 260-9, 311a.

463-6 (3,3) Introductory Instrumentation. Strain gages, bolometers, diffraction gratings. Electromagnetic techniques. Chemical techniques. Spectroscopy. Photoelasticity. Signal sensing and data handling. Recording systems. Transducers. Prerequisites: Mathematics 252b, Engineering 413, 414, 435a.

502-9 (3,3,3) Advanced Heat Transfer.

503-9 (3,3,3) Heating and Cooling Systems.

510-9 (3,3,3) Electromagnetic Fields.

511-6 (3,3) Quantum Electronics.

512-8 (4,4) Continuum Mechanics.

513-9 (3,3,3) Fluid Mechanics.

516-8 (4,4) Water Resources Development.

517-12 (4,4,4) Analysis and Design of Engineering Systems.

520-9 (3,3,3) Reaction Engineering and Rate Processes.

522-3 Advanced Topics in Operations Research.

530-6 (3,3) Separation Processes and Equilibrium Operations.

561-6 (3,3) Advanced Vibrations.

570-2 to 6 Special Investigations.

580-1 to 9 Seminar.

599-1 to 9 Thesis.

Engineering Technology

260-9 (3,3,3) Analytical Mechanics. (See Engineering 260).

301-9 (3,3,3) Refrigeration and Air Conditioning. (a) Discussion of refrigerating cycles. Refrigeration at more than one level. Operation and ratings of various types of compressors, evaporators, condensers, and automatic controls used in commercial refrigerating systems. Heat flow problems in condensers, evaporators, and cooling towers. (b) Control of temperature and humidity in buildings, or other large areas. Air handling equipment, duct systems, and air distribution within the space. Fundamental principles and

techniques for cooling and dehumidification for comfort. Equipment and control systems. (c) Physiological aspects of air conditioning. Air and water vapor mixtures, load estimates for heating, boilers, radiators, and heating systems. Complete and part air conditioning systems, including air handling equipment. Must be taken in a,b,c sequence. Prerequisite: Engineering 300a.

303-9 (3,3,3) Electronics Technology. A study of the fundamentals of vacuum tubes and transistors, including application of these devices in electronic circuits. Laboratory. Must be taken in a,b,c sequence. Prerequisite: 304-9.

304-9 (3,3,3) Electrical Circuits. (a) Foundations of electrical theory, solutions to D.C. steady state networks by the branch method, equivalent circuits, loop currents, and node voltages. Study of network theorems and dependent sources. Prerequisite: Mathematics 150a. (b) A.C. circuit theory by phasor transform method, complex power, three phase sources, mutual coupling, transformers. Prerequisite: 304a and Mathematics 150b. (c) Complex frequency, frequency response from pole-zero plots, Bode plots, transient analysis, introduction to Laplace transform methods. Laboratory. Prerequisite: 304b, Mathematics 225a.

308-9 (3,3,3) Machine Design. (a) Applications of the principles of mechanics to problems of design and development, mechanisms for specific functions, dynamic effects and friction in mechanisms. (b) Strength and safety considerations in design of machine parts. Fatigue and stress concentrations; power transmissions, bearings, brakes, clutches, and springs. (c) Combined stresses; helical, bevel, and worm gearing; curved beams, thick cylinder and flat plates; high-speed cams. The student puts previous studies into practice by design of a complete machine. Laboratory. Must be taken in a,b,c sequence. Prerequisite: 260-9.

310-9 (3,3,3) Construction Mechanics. (a) A study of construction methods, the forces involved in the management of machinery and manpower. (b,c) The dynamics of estimating, scheduling and controlling procedures. Must be taken in a,b,c sequence. Prerequisite: 260-9.

311-9 (3,3,3) Engineering Materials. (See Engineering 311).

314-9 (3,3,3) Soil Mechanics. (a) Mechanics of soil masses; soils as engineering materials. Soil identification and testing. (b) Shearing resistance and consolidation of soils, deformations with an analytical review of the theoretical concepts, results of laboratory materials, including cement, foundation, and surfacing materials. Use of X-ray diffraction and Debye-Scherrer camera equipment. Influence of mineral constituents on soil behavior and design. Laboratory. Must be taken in a,b,c sequence. Prerequisite: 311a,b.

318-9 (3,3,3) Hydraulics. (a) Fundamentals of fluid statics. Basic fluid flow concepts with applications. (b) Flow in open and closed conduits. Fundamentals of compressible fluid flow. Experimental techniques including the theory of hydraulic models and flow measuring techniques. Basic hydraulic machinery. Laboratory. (c) Hydrology. Flood routing and flood control. Fundamental principles of sediment transport and the collection and analysis of field data. Field trip. Must be taken in a,b,c sequence. Prerequisite: 260-9.

320-9 (3,3,3) Mechanical Engineering Laboratory. (a) A study of various types of measuring instruments. (b) Fuels and lubricants testing and exhaust gas analysis. (c) A study of the characteristics of internal combustion engines, steam turbines, compressors, pumps, fans, and refrigeration systems. Report writing. Laboratory. Must be taken in a,b,c sequence. Prerequisite: Engineering 300a.

322-6 (3,3) Internal Combustion Engines. (a) The design and principles of operation of internal combustion engines. The Otto, Diesel, and Brayton cycles and the fundamental thermodynamic laws involved. (b) Theories of combustion and detonation, combustion charts, fuels, and air tables. Effects of chemical equilibrium and variable specific heats. Cetane and octane numbers; carburetion and injection. Must be taken in a,b sequence. Prerequisite: Engineering 300b.

332-9 (3,3,3) Electrical Machinery. (a) Introduction to direct and alternating current machinery. Theory and operating characteristics. (b) Advanced studies on polyphase alternators, motors, machinery, and power generation. Laboratory. Must be taken in a,b,c sequence. Prerequisite: 304-9.

336-9 (3,3,3) Electrical Measurements. (a) Theory and use of D.C. and A.C. instruments; analysis of sensitivity, accuracy, precision, and error. (b) A study of ammeters, voltmeters, and wattmeters. Energy measurements, watt-hour and demand meters. (c) Theory and application of impulse testing;

oscillography; standards and tests. Laboratory. Must be taken in a,b,c sequence. Prerequisite: 304-9.

337-9 (3,3,3) Manufacturing Processes. (See Industrial Technology 337.)

338-12 (4,4,4) Electrical Instrumentation. (a) A discussion of the basic operating principles of control instruments and their applications to industrial processes. (b) The application of commercially available instruments to research problems. Dynamic and static calibration of instruments. (c) Control elements and techniques for devices and processes, dynamics of open and closed cycle control systems. Laboratory. Must be taken in a,b,c sequence. Prerequisite: 304-9, 318a,b.

340-4 Mechanisms. The movement of bodies in space, basic mechanisms including analytical and graphical analysis. Linkages, cams, gears and their manufacture. Vibration, critical speeds, and gyroscopic applications. Laboratory. Prerequisite: 260-9.

342-9 (3,3,3) Engineering Technology Design. An elective project on any engineering subject selected by the student with advice from the instructor. Stimulates original thought and creativity. Laboratory. Must be taken in a,b,c sequence. Prerequisite: 304-9, 311-6, Engineering 300a.

347-9 (3,3,3) Foundation Engineering. (a) Subsurface investigation, theory of consolidation and settlement, strength theory and conditions of failure due to stresses imposed by engineering structures on foundation materials. (b) Study of the principal problems involved in the analysis, design, and construction of foundations for buildings, highways and other engineering structures. (c) Science of soil stabilization, utilization of stabilization agents, stabilization of foundation materials. Laboratory. Must be taken in a,b,c sequence. Prerequisite: 314-9.

349-9 (3,3,3) Unit Operations. (a) Heat, mass and momentum transfer in processing industries. Empirical correlations of experimental data. Equipment design. (b) Stagewise operations, graphical solutions of mass and heat transfer problems. Applications in evaporation, drying and distillation. Process design. (c) Two phase separations, gas absorption, solvent extraction and leaching. Experimentation.

351-9 (3,3,3) Product Control. (See Industrial Technology 351.)

363-12 (4,4,4) Surveying. (a) The use and care of surveying instruments. Fundamental principles of surveying, computations, route surveying, topographic surveying data processing. (b) Field astronomy, route surveying, land surveying, state coordinate systems, and subsurface surveys. (c) Precise surveying, geodesy, altimetry analysis of errors and error propagation, conditioned and adjusted by method measurements of least squares and other methods. Laboratory. Prerequisites: 363a. Technology 101a,b and Mathematics 111b.

364-6 (3,3,) Highway Engineering. (a) Highway administration, planning, economics and finance. Highway surveys, plans and computation. Traffic engineering. (b) Highway design, drainage, roadside development and subgrade structure. Instruction in all types of base courses, surfaces and paving. Highway construction and maintenance. Preferred in sequence but not required. Prerequisite: 363a.

400-9 (3,3,3) Plastics Technology. (a) Uses of plastic materials including laboratory research and techniques using various methods of fabrication and processing of plastic materials. (b) Properties of high polymers, stability, testing, rheology, mechanical, electrical, thermal, optical and chemical properties; specialty uses. (c) Plastics as materials of construction and their uses in industrial applications, laminates, engineering properties of rubbers, foams, adhesives and surface coatings; designing with plastics; plastics in electrical applications.

425-2 to 8 Practicum in Technology. Experiences in the industrial applications of technological knowledge. Cooperative arrangements with selected corporations and professional organizations provide opportunity to study technical problems in the industrial environment under the direction of specialists. Prerequisite: 12 hours in technical subjects.

426-9 (3,3,3) Photogrammetry. (a) Principles and practice of terrestrial and aerial photogrammetric mapping, including planning flights, control surveys, uncontrolled mosaics, radial-line control, simple stereoplotting instruments, parallel distortions, graphical till determination, trimetrogen charting and economics. (b) An advanced study of photogrammetric principles including controlled mosaics, rectification, graphical, mechanical, and analytical space

orientation. Readings and reports from current technical literature. The principles of many photogrammetric plotters are studied together with economic relation of these instruments to density of field control, office methods, and personnel. (c) A study of the soil and rock areas of the United States and the patterns present in aerial photographs. Fundamental elements of soil patterns are analyzed to permit determination of materials present and their properties. Emphasis is placed on photo interpretation for engineering and regional planning purposes. Laboratory. Prerequisite: 363a or consent of instructor.

430-2 to 8 Special Problems in Industry and Technology. Special opportunity for students to obtain assistance and guidance in the investigation and solution of selected technical problems. Prerequisite: consent of coordinator.

437-9 (3,3,3) Industrial Electronics and Communications. (a) Design of matching networks, impedance-admittance locus diagrams, transmission line equations, transmission line charts, stub matching. Prerequisite: 303a. (b) Electromagnetic fields in rectangular and circular wave guides, microwave techniques, antennas. (c) Unified treatment of various types of transmission systems with emphasis on the role of system bandwidth and noise in limiting the transmission of information.

440-8 (4,4) Design and Analysis of Industrial Organizations and Productivity. Case studies of industrial production methods and the process of industrial decision making; determinants of manpower utilization; transfer and processing of information, determinants of productivity levels. Prerequisite: consent of instructor.

465-8 (4,4) Industrial Safety. (Same as Industrial Education 465). (a) Basic fundamental principles of industrial accident prevention; significant accident statistics and costs; appraising safety performances; industrial plant hazards and safeguards; fire control fundamentals. (b) Effective industrial safety organizations, management and supervision; safety psychology; safety training programs; industrial hygiene programs; health safeguards; occupational diseases and other industrial hazards. Prerequisite: junior standing.

506-2 to 12 Industrial Design Research.

507-4 Industrial Quality Control.

526-9 (3,3,3) Surveying and Photogrammetry.

527-9 (3,3,3) Transportation and Highway Engineering.

540-8 (4,4) Design of Man-Machine Systems and Analysis of Production.

570-2 to 6 Special Investigations.

580-1 to 9 Seminar.

599-1 to 9 Thesis.

English

000-0 Remedial English as a Second Language.

105-6 (3,3) English Composition for Foreign Students. A course in writing and reading skills: composition, note-taking, summaries, grammar. Equivalent to GSD 101a and b; limited to foreign students selected by proficiency examination on entrance.

300-6 (3,3) Grammatical Analysis. Basic principles of traditional, structural, and generative grammars. Required of all teacher training candidates and minors; elective to others. English 300a is prerequisite for 300b.

302-12 (4,4,4) Survey of English Literature. A survey (a) to 1550, (b) 1550-1750, (c) after 1750. All three courses are required of students with a concentration in English.

309-12 (4,4,4) Survey of American Literature. A survey (a) to 1860; (b) 1860 to 1914; (c) 1914 to the present.

GSC 317-3 Recent American Literature.

GSC 318-3 British Modern Literature and Its Social Context. (Summer, abroad.)

GSC 345-9 (3,3,3) Masterpieces of World Literature.

GSC 351-6 (3,3) Masterpieces of the Novel.

GSC 365-3 Shakespeare.

390-3 Advanced Composition. Expository writing.

392-3 Professional Writing I. Introductory course for undergraduates. Prerequisite to 492, but credit for the course does not constitute automatic admission to 492. Prerequisite: consent of instructor.

400-4 Introduction to English Linguistics. An introduction to the methods of descriptive linguistics as applied to English: the phonemics, morphemics, and syntax of English. Recommended for those preparing to teach English.

402-4 Old English Literature in Translation. A study of prose selections from Bede, Aelfric, and other writers, and of poetry from the simplest riddles and gnomic verses to the complex forms of the Caedmonic and Cynewulfian schools, the elegaic poems, and *Beowulf*. Emphasis is on the literary and cultural significance of works studied.

403-4 The History of the English Language. A survey of the development of the language from Indo-European to modern English with special emphasis on Middle and Early Modern English changes.

404-12 (4,4,4) Middle English Literature. (a) Middle English Literature excluding Chaucer, (b) Chaucer: early poems and *Troilus*, (c) Chaucer: *Canterbury Tales*.

405-8 (4,4) Descriptive Linguistics. (a) Phonetics and phonemics, an analysis of language structure from phone to phoneme; (b) morphology and syntax, an analysis of language structure from morph to sentence. May be taken singly. Prerequisite: consent of instructor.

412-16 (4,4,4,4) English Nondramatic Literature. (a) Sixteenth Century, (b) seventeenth century, (c) the Augustan Age, 1660-1744, (d) the Age of Johnson, 1744-1798. May be taken singly.

418-4 English Literature, 1885-1914. Poetry, drama and fiction of the later Victorian and early modern period.

420-8 (4,4) American Poetry. (a) Trends in American poetry to 1900 with a critical analysis of the achievement of the more important poets, (b) the more important poets since 1900. May be taken singly.

421-16 (4,4,4,4) English Poetry. (a) Early Romantics: major emphasis on general background and on Blake, Coleridge, and Wordsworth; (b) later Romantics: emphasis on Byron, Shelley, and Keats, the minor figures; (c) Victorian poets: Tennyson, Browning, Arnold, and other poets in England, 1830-1880; (d) modern British poets. May be taken singly.

425-4 Modern Continental Poetry. Representative Poems by major 20th century poets of France, Italy, Germany, Spain, Russia, and Greece.

431-12 (4,4,4) Major American Writers. Significant writers of fiction and nonfictional prose from the Puritans to the twentieth century. (a) 1620-1800; (b) 1800-1865; (c) 1865-1915. May be taken singly.

438-4 Intellectual Backgrounds of American Literature. The relationship of basic ideas in America to American literature.

442-4 Romantic Prose. Fiction of Austen, Scott, Mary Shelley, Peacock, the Gothic novelists; prose of Lamb, Landor, Hazlitt, DeQuincey; criticism, journals and letters.

443-4 Victorian Prose. The chief writers of nonfiction prose from the late romantics to 1880.

447-4 American Humor and Satire. A consideration of the writers and forms of nineteenth and twentieth century humor.

454-12 (4,4,4) English Fiction. (a) Eighteenth century: Defoe through Jane Austen, (b) Victorian novel: 1830-1880; (c) twentieth century. May be taken singly.

456-4 Modern Continental Fiction. Selected major works of European authors such as Mann, Silone, Camus, Kafka, Malraux, Hesse.

458-8 (4,4) American Fiction. (a) The novel in America from its beginnings to the early twentieth century; (b) trends and techniques in the American novel and short story since 1914. May be taken singly.

460-16 (4,4,4,4) British Drama. (a) Elizabethan drama: from the beginning of the drama in late Middle Ages through its flowering in such Elizabethan playwrights as Greene, Peele, Kyd, Marlowe, Heywood, Dekker, but excluding Shakespeare; (b) Jacobean drama: the Jacobean and Caroline playwrights: Jonson, Webster, Marston, Middleton, Beaumont and Fletcher, Massinger, Ford Shirley; (c) Restoration and eighteenth century drama: after 1660, representative types of plays from Dryden to Sheridan; (d) modern British drama. May be taken singly.

464-4 Modern Continental Drama. The continental drama of Europe since 1870; representative plays of Scandinavia, Russia, Germany, France, Italy, Spain, and Portugal.

468-4 American Drama. The rise of the theater in America, with readings of plays, chiefly modern.

- 471-8 (4,4) **Shakespeare.** (a) The plays before 1600; (b) the plays of 1600 and later. Readings on the life of Shakespeare, the theater, and the acting company. May be taken singly.
- 473-4 **Milton.** A reading of a selection of the minor poems, of *Paradise Lost*, *Paradise Regained*, *Samson Agonistes*. Also a reading of the major treatises.
- 485-4 **Problems in the Teaching of English.** Aims, methods, materials, tests, programs, and other aspects of English instruction in the high school.
- 486-2 to 8 **Workshop in High School English.**
- 487-2 to 8 **Workshop in Junior High School English.**
- 492-8 (4,4) **Professional Writing II.**
- 494-4 **Literature in Society.** An analysis of the structure and function of literature as a social institution.
- 495-8 (4,4) **Literary Criticism.** (a) History of criticism: ideas and techniques from Aristotle to the end of the nineteenth century; (b) modern criticism: recent critics and critical attitudes, and practice in writing criticism.
- 497-12 (4,4,4) **Senior Honors Seminars.** (a,b) Topic will vary yearly. (c) Honors Readings. Enrollment restricted to undergraduates. Departmental approval required.
- 499-2 to 6 **Readings in English.** For English concentrations only. Departmental approval required. No more than four hours may be taken any one quarter.
- 500-2 **Materials and Methods of Research in English.**
- 501-4 **Old English Grammar.**
- 502-4 **Beowulf.**
- 504-4 **Advanced English Syntax.**
- 505-4 **Contrastive Linguistic Structures.**
- 506-3 **Old Norse.**
- 508-4 to 12 **Studies in Chaucer.**
- 509-4 to 12 **Studies in Middle English.**
- 511-4 to 12 **Studies in The Renaissance.**
- 513-4 to 12 **Studies in Seventeenth Century Literature.**
- 514-4 to 12 **Studies in Restoration and Eighteenth Century Literature.**
- 518-4 to 12 **Studies in English Literature, 1885-1914.**
- 519-4 to 12 **Studies in Contemporary British Literature.**
- 520-4 to 12 **Studies in Romantic Writers.**
- 521-4 to 12 **Studies in Victorian Poetry.**
- 524-4 to 12 **Studies in the Metaphysical Poets.**
- 532-4 to 12 **Studies in American Transcendentalism.**
- 534-4 to 12 **Studies in Early Nineteenth Century American Writers.**
- 536-4 to 12 **Studies in Later Nineteenth Century American Writers.**
- 537-4 to 12 **Studies in Twentieth Century American Writers.**
- 538-4 to 12 **Problems in American Literature.**
- 543-4 to 12 **Studies in Victorian Nonfiction Prose.**
- 555-4 to 12 **Studies in The Victorian Novel.**
- 560-4 to 12 **Studies in Renaissance Drama.**
- 566-4 to 12 **Studies in Shakespeare.**
- 569-4 **Seminar in Special Problems of English as a Foreign Language.**
- 579-16 (4,4,4,4) **Studies in Modern Literature.**
- 580-4 **Traditional Themes.**
- 581-12 (4,4,4) **Problems in High School English.**
- 585-2 **Teaching College Composition.**
- 588-9 (3,3,3) **Methods of Teaching English as a Foreign Language.** (a) Classroom techniques, (b) laboratory methods, (c) preparation of materials.
- 594-4 or 8 **Studies in Literary Form and Symbolic Action.**
- 597-2 to 4 **Readings in Linguistics.**
- 598-1 to 6 (1 to 3, 1 to 3) **Review of English and American Literature.**
- 600-1 to 48 **Dissertation.**

Finance

- 301-1 to 6 **Readings in Finance.** Readings in classical and current writing on selected topics in various areas in the field of Finance.
- 305-4 **Personal Finance.** An introduction to the problems of personal financial asset management, including income and expense budgeting. Emphasis also placed on consumer credit, insurance, investments, home ownership and taxation. (Not open to students with concentrations in the School of Business.)

320-5 Introduction to Business Finance. Financial structure in industry, sources of capital, regulation of securities, of stock exchanges, and the Security and Exchange Commission; dividend and other financial policies. Interpreting corporation reports and evaluating securities through the analysis of financial statements. Prerequisites: Accounting 251c or consent of instructor. Economics 215.

323-4 Investments. Survey of the problems and procedures of investment management; types of investment risks; investment problems of the individual as well as the corporation. Prerequisite: 320 or consent of instructor.

324-4 Security Analysis. Application of investment principles to investment policy; analytical principles and techniques; analysis of fixed income corporate securities, of senior securities with speculative features, of common stocks, of government and municipal securities, and of investment company securities. Prerequisite: Finance 323.

325-4 Financial Institutions. Study of sources and uses of funds of commercial banks, savings and loan associations, pension funds, insurance companies, credit unions, consumer finance companies, sales finance companies and other financial institutions. Prerequisite: Economics 214.

326-4 Commercial Bank Management. A study of the principal policies and problems which confront top management. Major emphasis is given to liquidity, loans, investments, deposits and capital funds. Consideration is also given to bank statements, organization structure, operations, personnel, cost analysis, and public relations. Junior standing or consent of instructor.

327-4 General Insurance. Underlying principles and functions of insurance in the economic life of the individual and of business. Prerequisite: junior standing or consent of instructor.

328-3 Real Estate. A study in real estate decision making and analysis of real estate problems. Examines the environment and variables; the background; the specialists on decision making; and, the purchase, financing, and estate planning decisions.

371-4 Business Law I. Introduction to the history and philosophy of law, contract law, jurisdiction and court procedure, conflicts of law and tort law.

372-4 Business Law II. Real property law, personal property law, partnership law, agency and corporation law. Prerequisite: 371.

373-4 Business Law III. Negotiable instruments, sales, suretyship and uniform commercial code. Prerequisite: 371.

421-4 Management of Business Finance. The principal problems of managing the financial operations of an enterprise. Emphasis upon analysis and solutions of problems pertaining to policy decisions. Prerequisite: 320.

422-4 Advanced Financial Management. The development of ability to use sophisticated analytical tools by the discussion of case situations dealing primarily with capitalization, return on investment, and cost of capital. Prerequisite: 421.

428-4 Life Insurance. Particular attention given to policy forms and provisions, reserve and investment problems, company organization, legal aspects, taxation, and personal and business needs. Prerequisite: 327.

430-4 Business Finance. An introductory course combining both a description of the structure of business financing and an analysis of functional finance from a managerial viewpoint. Restricted to MBA students.

473-4 Business in its Legal Environment. Social and economic assessment of environmental factors influencing business policies and strategies. Emphasis is placed on legislation affecting competition and allocation of the firm's products and resources. Prerequisite: senior standing.

475-4 Budgeting and Systems. Budgeting and system as aids in coordinating and directing business operations. Prerequisites: 320, Accounting 251c.

Food and Nutrition

100-3 Fundamentals of Nutrition. Emphasis on basic principles of food and nutrition in relation to personal health.

106-3 Fundamentals of Foods. An introduction to the basic principles and techniques of food preparations. Not open to students specializing in Food and Nutrition or Home Economics Education.

247-6 (2,2,2) The School Lunch Program. (a) Food purchasing; (b) quantity food production, and (c) nutrition practices in the school lunchroom.

- 256-5 Science of Food.** Application of scientific principles to food preparation. Prerequisites: 100, GSA 101c or equivalent.
- 320-3 Nutrition.** Principles of nutrition in relation to intermediary metabolism and the role of vitamins and minerals. Prerequisites: 100, Chemistry 110 and 240.
- 321-3 Food and Nutrition Demonstration.** Emphasis on principles of food and nutrition including food standards and demonstration techniques. Field trip. Prerequisite: 256.
- 335-4 Meal Management.** The selection, purchase, preparation and service of food with emphasis on time and money management. Prerequisite: 256.
- 356-4 Experimental Foods.** Experimental approach to the study of factors influencing the behavior of foods. Individual problems. Prerequisites: 256, GSA 101b,c.
- 360-8 (4,4) Quantity Food Production.** (a) Use of power equipment, standardized formulas, and techniques of quantity preparation and service of food to large groups; (b) Practical experiences in area food service units. Prerequisite: 256.
- 361-3 Food Service Organization and Management.** Policies, budgets, supervision, and personnel in feeding large groups. Prerequisite: 256.
- 362-3 Institution Equipment and Layout.** Selection and arrangement of various types of institutional food service equipment, including materials, construction, operation, cost, use and care. Field trip. Prerequisite: 256.
- 363-3 Food Purchasing for Institutions.** Principles and methods of purchasing food in quantity. Field trip. Prerequisite: 256.
- 371-6 Field Experience.** Opportunity for supervised learning experiences in the student's area of concentration. Consent of instructor and chairman.
- 390-3 Diet Therapy.** Study of physiological and biochemical changes in certain diseases with emphasis on those involving nutritional therapy. Prerequisite: 320.
- 420-3 Recent Developments in Nutrition.** Critical study of current scientific literature in nutrition. Prerequisite: 320 or equivalent.
- 421-3 Recent Trends in Food.** Critical study of current scientific literature in food. Prerequisite: 320 or equivalent.
- 481-2 to 4 Readings.** Supervised readings for qualified students. Prerequisites: 320 or consent of chairman and instructor.
- 490-3 Nutrition and Growth.** Lectures, readings, and discussions on nutrition in relation to human growth. Prerequisites: 420 or equivalent.
- 500-4 Research Methods.**
- 515-1 to 6 Seminar.**
- 520-3 Advanced Nutrition.**
- 556-4 Advanced Experimental Foods.**
- 572-2 to 8 Special Problems.**
- 599-5 to 9 Thesis.**

Foreign Languages

The student who has completed one year of foreign language in high school will usually begin with the first quarter of the first year course which is in General Studies. The student who has completed two years of high-school foreign language will usually begin with the intermediate course.

Students taking work in any first year college foreign language series should note that the first two quarters will not be counted as electives toward graduation unless the third quarter is also completed.

General Foreign Language Courses

435-4 to 8 Workshop in Elementary Foreign Language Instruction. Designed to assist elementary school teachers in integrating foreign languages into their teaching program as well as to encourage high school teachers to introduce or supervise foreign languages at the elementary school level. To count as education or foreign languages. Prerequisite: basic language credit.

Chinese

120-3 (1,1,1) Chinese Conversation. Conversation and oral drill taken with GSD 120 by students who wish additional oral training: elected only by students enrolled in GSD 120.

201-15 (5,5,5) Intermediate Chinese. Designed to give the students a review of the Chinese language and its expansion, a reading ability of modern prose, and practice in conversation and composition. Must be taken in a,b,c sequence. Prerequisite: one year of college Chinese (GSD 120c) or equivalent.

French

123-3 (1,1,1) French Conversation. Conversation and oral drill taken with GSD 123 by students who wish additional oral training: elected only by students enrolled in GSD 123. Parts may be taken singly.

161-0 French for Graduate Students. Intensive study of grammar and vocabulary. Designed for graduate students desiring a reading knowledge of French.

201-9 (3,3,3) Intermediate French. Composition, oral practice, rapid reading of modern authors with special attention to the role of French culture in world civilization. Must be taken in a,b,c sequence. Prerequisite: GSD 123 or two years of high school French, or equivalent.

220-6 (2,2,2) Intermediate French Conversation. Development of oral skill on the intermediate level. Offered for 3 quarters at 2 hours per quarter; may be taken for credit each time. Prerequisite: 201c or concurrent registration in any quarter of 201.

GSC 305-3 Contemporary French Drama.

310-9 (3,3,3) Survey of French Literature. French literature from the beginning to the present time. Should be taken in a,b,c sequence. Prerequisite: 201c.

320-6 (2,2,2) Advanced Conversation. Conversation based on French history. Should be taken in a,b,c sequence.

350-8 (4,4) Advanced Composition and Conversation. Oral and written practice for advanced students; intensive study of idiomatic expressions and current usage. Should be taken in a,b sequence.

352-5 French Conversation and Phonetics. A thorough study of the phonetic alphabet and the formation of French sounds.

400-4 French Literature Between 1870 and 1914. A survey of naturalism and the subsequent reactions to naturalism, chiefly in the drama and novel. Prerequisite: 310c.

401-9 (3,3,3) French Literature of the 17th Century. (a) Tragedy; (b) Comedy; (c) Nondramatic literature.

403-9 (3,3,3) French Literature of the 18th Century. (a) Theater; (b) Novel; (c) Philosophic and Didactic Literature.

405-3 French Contemporary Novel. A study of the novel from 1900 to the mid 20th century, with detailed attention to Proust and Gide.

406-3 French Poetry from 1850 to 1900. The Parnassian and Symbolist Movements in French poetry.

407-3 French Poetry Since 1900. A study of French poetry from 1900 to the present.

500-2 Seminar in Contemporary French Literature.

501-2 to 6 Seminar on a Selected French Author.

502-3 French Literature from La Chanson de Roland to Rabelais.

503-3 Rabelais and Montaigne.

504-3 La Pleiade.

507-3 A Study of Romanticism in France.

510-4 19th Century Realism.

511-3 20th Century French Drama.

515-6 (3,3,) Old French.

520-4 Graduate Composition and Diction.

543-2 to 6 Research Problems.

599-2 to 9 Thesis.

German

126-3 (1,1,1) German Conversation. Conversation and oral drill taken with GSD 126 by students who wish additional oral training: elected only by students enrolled in GSD 126. May be taken singly.

161-0 German for Graduate Students. Intensive study of grammar and vocabulary. Designed for graduate students desiring a reading knowledge of German.

201-9 (3,3,3) Intermediate German. Composition, oral practice, rapid reading of modern authors with special attention to the role of German culture in world civilization. Must be taken in a,b,c sequence. Prerequisite: GSD 126 or two years of high school German, or equivalent.

- 220-6 (2,2,2) **Intermediate German Conversation.** Development of oral skill on the intermediate level. Offered for 3 quarters at 2 hours per quarter; may be taken for credit each time. Prerequisite: 201c or concurrent registration in any quarter of 201.
- 301-8 (4,4) **Survey of German Literature to 1800.** Historical development of German literature. Should be taken in a,b sequence.
- 303-4 **German "Novelle" in the Nineteenth Century.** A study of representative works from 1800 to 1900, with emphasis on the literary movements of that time.
- 304-12 (4,4,4) **Advanced Composition and Conversation.** Required for prospective teachers of German.
- 310-8 (4,4) **Introduction to German Classical Literature.** Lessing, Goethe, Schiller. Reading and discussion of representative works.
- 312-4 **German Drama in the Nineteenth Century.** Kleist, Grillparzer, Hebbel. Reading and discussion of representative works.
- 315-4 **From Rationalism to Realism.** Study of German literary works representing 18th Century Rationalism, "Sturm und Drang" and Romanticism which leads over to the literature of Realism; lectures and reports.
- 401-4 (2,2) **Goethe's Faust.** (a) The Faust legend and early Faust books and plays; the genesis of Goethe's Faust: reading of Part I. (b) reading of Part II; study of symbolism such as blending of paganism with Christianity, ancient Greek culture with Germanic culture. Must be taken in a,b sequence.
- 402-3 **Advanced German Syntax.** Descriptive and contrastive study of German syntax, with particular attention to the needs of prospective teachers.
- 403-3 **German Ballads and Lyrics.** A selective study of the foremost examples of German balladry and lyric poetry, ranging from the poetry of Klopstock and Burger to that of Hesse, Benn, etc. Lectures, recitations.
- 404-4 **Weimar and Its Aftermath.** German writings from the inception of the Weimar Republic to the end of World War II, with special reference to the correlation existing between literary expression and social, economic and political conditions.
- 406-3 **The German Comedy.** Comic and satirical works in German Literature, with special emphasis on the "Lustspiel" since 1800; lectures, reports.
- 407-2 **Great German Plays of the 20th Century.** Study and selective readings of outstanding stage successes; lectures, reports.
- 408-4 **German Civilization.** Intensive study of the German speaking areas of the world, with emphasis on the anthropological and sociological aspects of their respective cultures (Austrian, German, Swiss, "Reichs-deutsch," etc.); lectures, reports.
- 411-6 (3,3) **Middle High German.** (a) Grammar, and selective readings in both MHG originals and NHG translations of such epics as the Nibelungenlied and Gudrun. (b) The Courtly epic poetry of such authors as Wolfram von Eschenbach, Gottfried von Strassburg, Hartmann von Aue, the lyric poetry of Walther von der Vogelweide, and didactic prose.
- 413-6 (3,3) **German Linguistics.** (a) Introduction to Comparative German Linguistics tracing relationships among German languages on the basis of phonology, morphology, and syntax; (b) History of the German language; a survey of the development of German through the Old-, Middle-, and High German periods; lectures, readings, reports.
- 497-1 to 2 **Readings in 18th Century German Literature.** Departmental approval required.
- 498-1 to 2 **Readings in 19th Century German Literature.** Departmental approval required.
- 499-1 to 2 **Readings in 20th Century German Literature.** Departmental approval required.
- 500-2 **Seminar in Contemporary Literature.**
- 501-2 **Seminar on a Selected German Author.**
- 506-2 **Romanticism I.**
- 507-2 **Romanticism II.**
- 509-4 (2,2,) **Old High German.**
- 512-3 **19th Century German Novel.**
- 513-3 **20th Century German Novel.**
- 514-3 **Seminar in Folklore.**
- 533-3 **Gothic.**
- 543-2 to 6 **Research Problems.**
- 544-12 **NDEA Summer Institute for Teachers.**

591-2 to 6 Seminar on Kant.

599-2 to 9 Thesis.

Greek

201-12 (4,4,4) **Intermediate Greek.** Grammar review and composition. Selected readings. Taken in a,b,c sequence. Prerequisite: GSD 130c.

301-4 **Greek Historians.** Reading and discussion of selections from the histories of Herodotus, Thucydides, and Xenophon.

302-4 **Plato.** Reading and discussion of the **Republic**.

303-4 **Aristotle.** Reading and discussion of the **Ethics**.

311-8 (4,4) **Homer.** Reading and interpretation of selections from the **Iliad** and the **Odyssey**. Should be taken in a,b sequence.

313-4 **Greek Tragedy.** Reading of at least two plays from the works of Aeschylus, Sophocles, and Euripides.

315-2 to 8 **Readings from Greek Authors.** Flexible reading program of works not included in other courses. By special permission only. Prerequisite: 201c.

GSC 320-3 **Greek Literature in Translation.**

GSC 330-3 **Classical Mythology.**

GSC 332-3 **Classical Drama.**

Italian

144-3 (1,1,1) **Italian Conversation.** Taken with GSD 144 by students who wish additional oral training; elected only by students enrolled in the corresponding beginning sections. Each quarter may be taken separately.

Latin

201-12 (4,4,4) **Intermediate Latin.** Composition and reading from various authors. Should be taken in a,b,c sequence. Prerequisite: GSD 133 or two years of high-school Latin.

301-4 **Cicero's Essays and Letters.** Prerequisite: 201c or equivalent.

302-4 **Vergil's Eclogues and Georgics.** Prerequisite: 201c or equivalent.

303-4 **Tacitus.** Prerequisite: 201c or equivalent.

304-2 **Private Life of the Romans.**

311-4 **Roman Comedy.** Prerequisite: 201c or equivalent.

312-4 **Horace's Odes and Epodes.** Prerequisite: 201c or equivalent.

313-4 **Letters of Pliny.** Prerequisite: 201c or equivalent.

315-2 to 8 **Readings from Latin Authors.** Flexible reading program in works not included in other courses. By special permission only.

326-4 **Ovid's Metamorphoses.**

GSC 331-3 **Latin Literature in Translation.**

GSC 332-3 **Classical Drama.**

335-4 **Vergil's Aeneid.**

342-4 **Advanced Composition.** A careful study based on classic prose-writers.

Portuguese

135-3 (1,1,1) **Elementary Portuguese Conversation.** Conversation and oral drill taken with GSD 135 by students who wish additional oral training. Elected only by students enrolled in GSD 135. Parts may be taken singly.

201-9 (3,3,3) **Intermediate Portuguese.** Composition, oral practice, rapid reading of modern authors. Must be taken in a,b,c sequences. Prerequisite: GSD 135c or two years of high school Portuguese, or equivalent.

Russian

136-3 (1,1,1) **Russian Conversation.** Conversation and oral drill taken with GSD 136 by students who wish additional oral training; elected only by students enrolled in GSD 136. Parts may be taken singly.

161-0 **Russian for Graduate Students.**

201-9 (3,3,3) **Intermediate Russian.** Composition, oral practice, rapid reading of modern authors with special attention to the role of Russian culture in world civilization. Must be taken in a,b,c sequence. Prerequisite: GSD 136 or two years of high school Russian, or equivalent.

220-6 (2,2,2) **Intermediate Russian Conversation.** Development of oral skill on the intermediate level. Offered for three quarters at 2 hours per quarter; may be taken for credit each time. Prerequisite: 201c or concurrent registration in any quarter of 201.

- 308-9 (3,3,3) **Survey of Russian Literature.** Historical survey of major movements, authors, and works in Russian to the present time. Should be taken in a,b,c sequence. Prerequisite: 201c.
- 320-2 **Readings in Russian Literature.** Selected readings in areas not covered in regular course work.
- 330-6 (2,2,2) **Advanced Composition and Conversation.** Based on the history of Russia and the cultural heritage of the Russian people. Should be taken in a,b,c sequence concurrently with 308-9.
- 401-8 (4,4) **The Russian Novel in the Nineteenth Century.** Should be taken in a,b sequence.
- 411-8 (4,4) **Introduction to Russian Classical Literature.** Gogol, Pushkin, Turgenev, Tolstoy. Should be taken in a,b sequence.
- 413-4 **Russian Drama in the Nineteenth Century.** Griboyedov, Gogol, Pushkin, and minor dramatists.
- 414-3 **Russian Poetry from Zhukovsky to 1920.** A study of Russian Poetry from Sentimentalism through Symbolism.
- 425-3 **Soviet Literature Since 1917.** A study of satirists and writers of everyday life. Constructivism and followers; Soviet literary criticism. Lectures, readings, and reports.
- 452-4 **Advanced Composition and Conversation.** Oral and written composition of a practical nature for advanced students; emphasis on study of idiomatic expressions and current usage.
- 500-2 **Seminar in Contemporary Russian Literature.**
- 501-2 **Seminar on a Selected Russian Author.**
- 503-2 **Seminar on 19th Century Russian Literature.**
- 509-3 **Russian Literature of the 17th Century.**
- 510-3 **Russian Literature of the 18th Century.**
- 514-6 (2,2,2) **History of the Russian Language.**
- 520-4 **Russian Linguistic Structure.**
- 543-2 to 6 **Research Problems.**
- 599-2 to 9 **Thesis.**

Spanish

- 140-3 (1,1,1) **Spanish Conversation.** Conversation and oral drill taken with GSD 140 by students who wish additional oral training; elected only by students enrolled in GSD 140. Parts may be taken singly.
- 161-0 **Spanish for Graduate Students.** Intensive study of grammar and vocabulary. Designed for graduate students desiring a reading knowledge of Spanish.
- 201-9 (3,3,3) **Intermediate Spanish.** Composition, oral practice, rapid reading of modern authors with special attention to the role of Spanish culture in world civilization. Must be taken in a,b,c sequence. Prerequisite: GSD 140 or two years of high school Spanish, or equivalent.
- 220-6 (2,2,2) **Intermediate Spanish Conversation.** Development of oral skill on the intermediate level. Offered for 3 quarters at 2 hours per quarter; may be taken for credit each time. Prerequisite: 201c or concurrent registration in any quarter of 201.
- 310-9 (3,3,3) **Survey of Spanish Literature.** The literature of Spain to the present. Should be taken in a,b,c sequence. Offered alternately with 333. Prerequisite: 201c.
- 316-3 **Civilization Espanola.** A study of the cultural patterns and heritage of the Spanish people from earliest times to the present. Prerequisite: 315 or consent of instructor.
- 320-6 (2,2,2) **Advanced Composition and Conversation.** Required of students with a concentration in Spanish and students preparing to teach. May be taken concurrently with 310 or 333.
- 333-9 (3,3,3) **Survey of Spanish American Literature.** Spanish literature in America from the conquest to modern times. Offered alternately with 310. Prerequisite: 201c.
- 350-3 **Advanced Composition.** Daily themes based on Spanish models; with free composition once a week. Class discussions.
- 360-2 to 8 **Travel-Study Course in Mexico.** Lectures and course work at Mexican universities, in conjunction with the Latin American Institute's Study Abroad Program. Native professors and lecturers in Mexico City and other points visited. Individual projects and reports. Prerequisite: advanced standing in Spanish.

IBERIAN

- 401-3 **Spanish Novel of the 19th Century.** Study of representative novels of Fernan Caballero, Valera, Pereda, Galdos, etc.
- 402-3 **Spanish Drama of the 18th and 19th Centuries.** Reading of representative plays of the chief dramatists from Moratin to the Generation of 1898.
- 403-3 **Spanish Poetry.** General survey of Spanish poetry from its beginnings to 1900.
- 404-6 (3,3) **Spanish Literature of the 20th Century.** (a) The Generation of 1898. (b) Contemporary Novel and Essay. Main trends of the Spanish novel and essay since 1900.
- 415-3 **Spanish Phonetics.** Analysis of the sounds of Spanish and their manner of production; intonation; levels of speech; oral practice.
- 440-6 (3,3) **The Golden Age: Drama.** Plays of Lope de Vega, Calderon, Tirso de Molina, Ruiz de Alarcon, and others.
- 445-4 **Cervantes. Don Quijote;** other works assigned as collateral readings.
- 501-2 **Seminar on a Selected Spanish Author.**
- 505-3 **The Picaresque Novel.**
- 506-3 **The Renaissance.**
- 515-6 (3,3) **Old Spanish.**
- 520-3 **Seminar in Syntax.**
- 525-3 **The Spanish Ballads.**
- 543-2 to 6 **Research Problems.**
- 560-4 **Spanish and Latin American Bibliography.**
- 599-2 to 9 **Thesis.**

AMERICAN

- 421-3 **Survey of Modernism in Spanish American Poetry.** Study of its origins, characteristics and achievements.
- 422-3 **Contemporary Spanish American Poetry.** Spanish American poetry since modernism.
- 423-3 to 4 **The Mexican Novel of the 20th Century.** Emphasis on fiction dealing with the Revolution and related social problems.
- 424-3 to 4 **Gaucho Literature.** Study of the Gaucho as a social class and of the types of literature developed to portray and symbolize his way of life, attitudes and values.
- 426-3 **The Mexican Short Story.** Survey of the Mexican short story from pre-Conquest to the present.
- 427-3 **Spanish American Drama.** Study of representative works of Florencio Sanchez, Rodolfo Usigli, Armando Moock, Samuel Eichelbaum, Xavier Villarrutia, and others.
- 478-4 **Seminar in Latin American Thought.** (See Philosophy 478.)
- 500-2 **Seminar in Latin American Literature.**
- 535-3 **Mexican Essayists of the 19th Century.**
- 538-3 **Seminar on Spanish American Poetry.**
- 541-3 **Seminar on Spanish American Literary Criticism.**
- 543-2 to 6 **Research Problems.**
- 560-4 **Spanish and Latin American Bibliography.**
- 599-2 to 9 **Thesis.**

Romance Philology

- 410-4 **Romance Philology I.** Survey of phonology, morphology, and syntax changes in Romance languages in general; special attention to the developments in French and Spanish for students with concentration in these fields.
- 514-4 **Romance Philology II.**
- 516-4 **Arthurian Romance.**

¹Courses count toward concentration in French or Spanish.

Forestry

- 104-3 **Introduction to Forestry.** Acquaints students with the broad field of multiple-use forestry. Special emphasis is given to forestry as a profession. Field trips. For students with a concentration in forestry or with instructor's consent. Only offered to freshmen or sophomore students.

- 221-2 to 4 Dendrology.** Taxonomy and silvics of angiospermous and gymnospermous trees and shrubs. Field trips.
- 230-2 Lumber Grading.** The study and practice of applying National Hardwood, Southern Pine, and West Coast Rules in grading lumber. Tally methods and grading for special products are also covered.
- 301-4 Soil Science for Foresters.** (Same as Plant Industries 301.) Basic concepts of soil formation, classification, characteristics, fertilization, and management as they apply to the growth of trees. Field trips. Prerequisite: one course in chemistry and a concentration in forestry.
- 306-3 Silvical Field Studies.** The forest as a result of site and biotic factors. Influences of the forest on the site. Prerequisite: GSA 340.
- 320-4 Wood Technology.** Structure, identification, and physical properties of wood. Prerequisite: GSA 201c.
- 330-2 Harvesting Forest Products.** Principles of harvesting and transporting forest products. Field trips.
- 333-4 Forest Products Industries.** Principles of management and manufacturing methods in forest products industries. Utilization studies of Illinois logging and lumber companies.
- 340-2 Forest Protection.** The causes and effects of forest fires; physics of fire behavior, use of fire as a silvicultural tool.
- 350-6 (3,3) Forest and Outdoor Recreation.** Recreational use of forest and adjacent lands with emphasis on parks and national forests. Administration; interpretation; trends in use and developments. Field trips.
- 360-4 Farm Forestry.** The management of farm woodlands, measurement of logs, trees, and stands; planting and harvesting methods; improvement cuttings; uses and marketing of woodland products. Field trips. Forestry students not admitted. 104, 360, and 361 mutually exclusive.
- 361-4 Forest Conservation.** The importance and use of forests, their management and conservation, public forest policy. Forestry and other agricultural students not admitted. 104, 360, and 361 mutually exclusive.
- 363-9 (5,4) Forest Mensuration.** (a) Principles and methods of measuring volume of trees, stands of timber, and rough wood products. Preparation of yield tables and growth studies. Field trips. Prerequisite: GSD 109 or 115. (b) Timber cruising, log scaling, and growth studies on Southern Illinois University. Experimental Forest and cooperating forest ownerships. Spring field trips. Prerequisite: 363a.
- 365-10 (4,3,3) Silviculture.** (a) The theory and practice of applying ecological knowledge to economic management of establishment, composition, and growth of forest stands. Field trips. Prerequisites: Botany 320, Plant Industries 301 (concurrent), GSA 340. (b) Student participation in planting, weeding, thinning, pruning and improvement cuttings. Prerequisite: 365a. (c) Applied systems of silviculture to commercially important timber species and types in the U.S. Prerequisite: 365a.
- 369-3 Forest Photogrammetry.** Use of stereoptic plotting instruments and aerial photos to map and type forest stands.
- 375-4 Forest Management.** Economic and technical principles involved in managing forests. Prerequisite for 365a,b.
- 381-1 to 2 Agricultural Seminar.** (Same as Animal Industries 381, Agricultural Industries 381, and Plant Industries 381.) Discussion of problems in agriculture and forestry. Limited to senior students.
- 390-1 to 6 Special Problems in Forestry.** Assignments involving research and individual problems in forestry. Prerequisite: advanced standing and written consent of instructor, 3.75 grade point average, and consent of chairman.
- 401-3 Advanced Forest Mensuration.** Theory and practical problems in biometrics to obtain estimates of forest populations. Use of computers and other advanced techniques. Prerequisites: 363-9 or equivalent.
- 410-3 Forest Management for Wildlife.** Interrelations between forest practices and game. Forest protection from mammals and birds. Emphasis is on the treatment of the forest. Prerequisite: Zoology 463 and concentration in forestry or consent of instructor.
- 440-4 Ecology of Grasses and Grasslands.** (Same as Botany 440.) Structure, analysis, and dynamics and grassland communities; structure and growth of individual species. Field and laboratory work. Prerequisite: GSA 340 or consent of instructor.
- 450-4 Forest and Park Administration.** Fundamentals of management and administration of recreation forests. Development of forests and suburban

parks under a forest environment. Review of current local, state, and Federal legislation applicable to forest recreation.

451a-3 Forest Park Plans. Fundamental and applied principles and elements involved in site, master, and comprehensive planning for outdoor recreation at the state, metropolitan, and federal level. Prerequisites: 350-6 or consent of instructor.

451b-4 Park Design and Development. Basic planning and design principles of space, scale, and circulation applied to park and recreation areas at the state, metropolitan, and federal levels. Basic elements in park and recreation area site planning, selection and development. Prerequisites: 350-6 or consent of instructor.

464-4 Advanced Silviculture. Analysis and measurement of site quality; stand density; growth as related to site factors and competition; factors affecting reproduction; the tree as a variable. Prerequisite: 365a,b.

465-2 Forest Field Studies. An extended trip to study forest conditions and management practices in different forest regions of the United States. Cost shared by students. Prerequisites: 330, 363a, 365a.

466-3 Forest Watershed Management. Effects of treatment of forested watersheds on quality and quantity of water yield. Consideration of alternatives in water use and flood control. Prerequisites: Plant Industries 301, GSA 330, or consent of instructor.

470-8 (4,4) Economics of Forestry. (a) Production. Introduction to forestry economics; micro-economics of forestry production and conservation. Prerequisite: GSB 211a. (b) Marketing. Marketing in the forestry economy; introduction to aggregate planning in forestry including consumption and production goals. Prerequisite: 470a or consent of instructor.

471-4 Land Resource Economics. (Same as Agricultural Industries 471 and Economics 471.) The use of land as an economic variable in production of goods and services; land markets; group versus individual conflicts; elementary land resources planning techniques. Prerequisites: 470a or Agricultural Industries 350 or Economics 440.

476-3 Cases in Forest Management. A series of case studies analyzing governmental, industrial, and private forest management objectives and plans implemented by executive decisions. Prerequisite: 375:

520a-1 to 6 Readings in Forestry or Forest Recreation.

520b-1 to 6 Readings in Resource Economics.

520c-1 to 6 Readings in Forest Products or Wood Science.

570-3 Principles of Research.

575-1 to 6 Research.

581-1 to 6 Seminar.

599-2 to 9 Thesis.

Freshman Convocation

000-0 Freshman Convocation. (Same as University Convocation.)

Freshman Honors Seminar

111-0 Seminar for Superior Freshmen.

Geography

300-4 Introduction to Geography. The nature of geography, the kinds of problems which it investigates, the methods which it uses. Preparation for systematic geography.

302-4 Physical Geography. A study of the earth's physical surface, world distribution patterns of the physical elements, their relationship to each other and their importance to man. Field trip and laboratory work. Prerequisite: 300.

304-4 Economic Geography. Study of the spatial distribution and interaction of economic activities. Introduction to locational theory. Prerequisite: 300.

306-4 Cultural Geography. An overview of the geographic viewpoint in the study of the human occupancy of the earth. Aspects of population, settlement, and political geography are treated, and a generalized survey of major world cultural areas is used to integrate course elements. Prerequisite: 300.

310-7 (4,3) Cartographic Methods. Properties of maps and air photos, their uses and sources; Map symbols, map projections and map construction. Introduction to the use of quantitative techniques as applied in geographic study. Laboratory. Prerequisite: 300.

324-4 Geographic Basis of Resource Management. Survey of major resources of United States with stress on problems of conservation and restoration. Emphasis on water, mineral, forest, grass, soil, wildlife, scenic, and recreational resources. Field trips.

GSA 330-3 Weather.

GSA 331-3 Climate.

343-4 Teaching of Geography. Presentation and evaluation of methods of teaching geography. Emphasis upon geographic literature, illustrative materials, and teaching devices suitable to particular age levels. Prerequisite: 300.

GSB 354-3 Industrial Economic Geography.

387-2 to 4 Honors in Geography. Supervised research and investigation in different branches of geography. Open to students in the honors program.

400-3 Geographic Methods. Designed to introduce the geographic methods of integrating physical, economic, and cultural elements in the study of areas with the emphasis placed on problem situations. Cartographic and quantitative techniques will be emphasized. Prerequisites: 300, 302, 304, 306.

402-10 (4,3,3) Advanced Physical Geography I. Deals with one or more of the following: land forms, climate, soil, and water; depending on, and varying with, interests of the instructors. Thus, a student may register more than one time. Emphasis will be directed at familiarizing the student with techniques of analysis, and at developing concepts and principles that underlie understanding of the phenomena and their geographic significance. Prerequisite: 302 or consent.

403-7 (4,3) Advanced Physical Geography II. Content drawn from same broad range of topics as 402. To be alternated with 402 to enable student to specialize further in physical geography. Prerequisite: 302 or consent.

404-10 (4,3,3) Advanced Economic Geography I. Deals with one or more of the following: transportation, manufacturing, agriculture, resources, trade and urban geography; depending on, and varying with, interests of instructors. Thus, a student may register more than one time. Emphasis will be directed at familiarizing the student with techniques of analysis, and at developing concepts and principles that underlie understanding of the phenomena and their geographic significance. Prerequisite: 304 or consent.

405-7 (4,3) Advanced Economic Geography II. Content drawn from same broad range of topics as 404. To be alternated with 404 to enable student to specialize further in economic geography. Prerequisite: 304 or consent.

406-10 (4,3,3) Advanced Cultural Geography I. Deals with one or more of the following: population, settlement, ethnic characteristics, political factors; depending on, and varying with, interests of the instructors. Thus, a student may register more than one time. Emphasis will be directed at familiarizing the student with techniques of analysis and at developing concepts and principles that underlie understanding of the phenomena and their geographic significance. Prerequisite: 306, or consent.

407-7 (4,3) Advanced Cultural Geography II. Content drawn from same broad range of topics as 406. To be altered with 406 to enable student to specialize further in cultural geography. Prerequisite: 306 or consent.

410-8 (4,4) Advanced Geographic Techniques. Geographic applications of cartographic and quantitative research techniques. Prerequisite: 310 or consent.

416-8 (4,4) Advanced Cartography. Instruction and practice in the techniques of map-making and problems in map reproduction. Laboratory. Prerequisite: 310 or consent.

424-4 Regional Problems in Resource Management. The distribution, use, and interrelationship of the resources of the U.S. and the conservation techniques applied to them.

440-2 to 6 Reading for Majors. Supervised readings in selected subjects. Prerequisite: advanced standing and consent of department.

461-7 (4,3) Regional Geography: Anglo-America. Deals geographically with present-day United States and Canada. (a) A general survey of the area, open to students without a concentration; (b) Investigates specific topics in depth, for students with a concentration in geography.

462-7 (4,3) Regional Geography: Europe. See 461.

- 463-7 (4,3) **Regional Geography: Mediterranean Lands and Southwestern Asia.** See 461.
- 464-7 (4,3) **Regional Geography: Soviet World.** See 461.
- 465-7 (4,3) **Regional Geography: Africa.** See 461.
- 466-7 (4,3) **Regional Geography: Asia.** See 461.
- 467-7 (4,3) **Regional Geography: Latin America.** See 461.
- 468-7 (4,3) **Regional Geography: Oceania.** See 461.
- 470-20 (4,4,4,4,4) **Urban Planning.** (Same as Government 470.) (a) Planning concepts and methods; (b) Planning administration and the planning function in public process; (c) Field problems; (d) Urban planning seminar: Planning in a Free Society; (e) Planning and public administration internship. Parts c and d may be taken concurrently. Prerequisites: concentration in geography or consent.
- 471-7 (4,3) **Regional Planning.** Examination of the viewpoint, methods and techniques of regional planning. Prerequisite: Concentration in Geography or consent.
- 480-4 **Workshop in the Teaching of Geography.** Geographic approach to man in space. Skills and techniques in using maps, globes, pictures, statistics, and graphics and in reading the landscape and literature. Prerequisite: consent.
- 490-4 to 16 (1 to 4, 1 to 4, 1 to 4, 1 to 4) **Tutorial in Geography.** Individual and small group conferences with staff members to examine geographic concepts. (a,b,c) Prerequisite: Senior, concentration in geography; (d) Prerequisite: Institute status.
- 500-4 **Geographic Techniques I.**
- 501-4 **Geographic Techniques II.**
- 505-8 (2,2,2,2) **Pro-seminar in Geography.**
- 511-4 **Philosophy of Geography.**
- 514-2 **Teaching of College Geography.**
- 515-4 to 6 **Field Course.**
- 520-2 to 12 **Seminar in Physical Geography.**
- 521-2 to 12 **Seminar in Economic Geography.**
- 522-2 to 12 **Seminar in Regional Geography.**
- 523-4 to 12 **Seminar in Cartography.**
- 524-2 to 8 **Seminar in Cultural Geography.**
- 527-2 to 8 **Seminar in Urban and Regional Planning.**
- 530-2 to 10 **Independent Studies in Geography.**
- 540a-2 to 36 **Research in Physical Geography.**
- 540b-2 to 36 **Research in Economic Geography.**
- 540c-2 to 36 **Research in Regional Geography.**
- 540d-2 to 36 **Research in Cultural Geography.**
- 599-2 to 9 **Thesis.**
- 600-1 to 48 **Dissertation.**

Geology

- 220-5 **Physical Geology.** A study of the principal minerals and rocks of the earth's crust, emphasizing origin and identification; the physical processes active in producing the surface features of the earth. Laboratory and field trips required.
- 221-5 **Historical Geology.** Presenting in chronological order the procession of physical and biotic changes through which the earth has passed. Includes the physical history and evolution of life forms as evidenced by fossil records. Laboratory. Prerequisite: 220 or consent of instructor, elementary course in zoology or botany recommended.
- 302-4 **Structural Geology.** A study of the forces involved in the deformation of the earth's crust, with special emphasis on the recognition, interpretation, and illustration of the resultant geologic structures. Laboratory. Prerequisite: 220, 221.
- 310-4 **Crystallography.** The study of morphological crystallography including crystal symmetry, Hermann-Mauguin symbolism for the crystal classes, space groups, and solution of problems by means of the stereographic projection. Prerequisite: Trigonometry.
- 311-4, 312-4 **Determinative Mineralogy.** A study of nonsilicate and silicate minerals including the influence of crystal chemistry upon their structures, and physical and chemical properties. Laboratory practice in chemical deter-

mination and sight identification. Prerequisites: 310, Chemistry 111b (concurrently).

315-4 Petrology. A study of the characteristics and classification of rocks, their origin and geologic distribution. Laboratory. Prerequisite: 220.

320-4 Economic Geology. Study of the geological aspects and origin, as well as the economic and political importance, of mineral resources.

GSA 321-3 Introduction to Paleontology.

GSA 322-3 Rocks and Minerals.

410-4 Stratigraphy and Sedimentation. The characteristic features of sedimentary rocks and their processes of origin; the classification of stratigraphic units, methods of correlation, and paleogeologic reconstruction. Laboratory. Prerequisite: 220, 221.

414-5 Paleobotany. (See Botany 414).

415-4 Optical Mineralogy. The optical properties of minerals and the use of the petrographic microscope for identification of crystals by the immersion method and by thin section. Laboratory. Prerequisites: 310, Physics 208.

416-4 X-Ray Crystallography. Introduction to the study, measurement, and identification of unknown crystalline materials by X-ray diffraction techniques (especially the Debye-Scherrer methods). Upon request, students may work with unknowns from other fields of study. Prerequisites: 310, Mathematics 150.

420-9 (3,3,3) Geology of Petroleum. The geological occurrence of petroleum, including origin, migration, and accumulation; a survey of exploration methods and production problems and techniques. Laboratory study applies geological knowledge to the search for and production of petroleum. Laboratory. Prerequisites: 221, 302.

425-13 (5,4,4) Invertebrate Paleontology. (a) paleontology principles and a survey of important invertebrate phyla and their fossil representatives; (b) paleoecology and a comprehensive study of Mollusca and Bryozoa; (c) Coelenterata, Brachiopoda and Echinodermata. Laboratory. Prerequisites: 221 or GSA 201.

430-4 Physiographic Provinces of North America. Designed to give the student an intelligent appreciation of the evolution of land forms in the physiographic provinces of North America and to explain the surface features in a landscape. Prerequisite: 220.

431-8 (4,4) Geomorphology and Air Photo Interpretation. A study of land forms and surface conditions, relating topographic features to the underlying rocks and structure and to processes of erosion, deposition, and earth movements. Laboratories consider techniques of observation, description, and analysis including use of many types of maps, air photos, infra-red, radar, satellite and other geophysical sensing devices. Prerequisites: 220.

440-1 to 4 Independent Study. Prerequisites: 220, 221, advanced standing.

450-9 Field Geology. A field mapping course including problems in stratigraphy, structure, paleontology, physiography, and economic geology. Requires a written geologic report. Consult the department for dates, cost, and equipment. Prerequisite: 302.

450b-3 Advanced Field Geology.

510-11 (4,4,3) Stratigraphy.

515-12 (4,4,4) Mineral Deposits.

520-12 (4,4,4) Advanced Petrology.

528-3 to 9 Introduction to Micropaleontology.

540-1 to 9 Advanced Studies.

541-1 to 9 Research.

599-2 to 9 Thesis.

Government

231-5 American National Government. A survey covering the structure, functions, and principles of national government. Also meets social science and American government requirements.

232-5 State and Local Government. A survey of the structure and functions of American state and local government. Prerequisite: 231 or GSB 211b.

300-4 American Government. An advanced course to satisfy the American government requirements of the College of Education. Deals with the structure and functions of national, state, and local government. Not open to those who have had 231 or GSB 211b.

GSB 303-3 International Relations.

305-5 Development of the American Constitution. The evolution of the United States constitutional system. Recommended for prelaw students. Prerequisite: 231.

315-3 Administration of Justice. The organization and work of the American judicial system. Recommended for prelaw students. Prerequisite: 232.

321-1 to 6 Readings in Government. Prerequisite: consent of instructor.

330-2 Illinois Government. The development and functioning of government in Illinois. Prerequisite: 232.

340-3 The Legislative Process. A study of the principles, organization, and work of American legislative bodies. Prerequisite: 231.

GSB 345-3 Introduction to American Foreign Policy.

360-5 Public Administration. Principles and problems of administration on the national, state, and local level. Prerequisite: 231.

361-3 Problems in Public Administration and Policy Formulation. Intensive examination of problem areas illustrating administrative and management practices in public service and demonstrating linkages between politics and administration in our political system. Prerequisite: 360.

371-3 Problems of American Foreign Policy. An analysis of selected problems in the field of American foreign policy. Prerequisite: 231.

379-4 History of Political Parties. A study of the historical development of American political parties. Prerequisite: 232.

380-4 Political Parties. The development and work of American political parties. Prerequisite: 231 or 232.

GSB 390-3 Introduction to Comparative Government.**GSB 392-3 Introduction to Latin American Government and Politics.**

398-4 Government and Law. Techniques of law, (classification, rights, and duties). Legal personality, public law and private law, criminal law, justice acts. Property, possession and procedure. Prerequisite: 231.

406-4 The American Chief Executive: President and Governor. A study of the origin and background of the presidency and the governorship, qualifications, nomination and election, succession and removal, the organization of the executive branch, and the powers and functions of the president and governor. Prerequisites: 231, 232.

410-3 Labor and Politics. A political history of the American labor movement from its early 19th century origins to the present. Attention given to the political philosophy and practice of labor unions. Prerequisite: 231.

415-9 (3,3,3) Political Behavior. An analysis of the nature of public opinion and methods of influencing political behavior. Major attention given to studying the basic psychological attitudes and behavior. Prerequisite: 231.

420-3 Pressure Groups and Politics. An analysis of interest groups and their techniques of political propaganda. Prerequisite: 231.

430-3 Government and National Security. A study of the organization of government for national security; the historical and current developments in civil-military relations; the legal status of over-seas military aid programs; international defense programs; and the problem of disarmament. Prerequisite: 231 or consent of instructor.

432-3 Government and Natural Resources. A study of the administrative and policy problems in the development of multiple purpose conservation programs by the national government. Prerequisite: 231 or consent of instructor.

434-3 Government and Agriculture. An historical and contemporary survey of the role of agriculture in politics, the major and minor farm parties and pressure groups, the elements of the current "farm problem," and the influence of agriculture in public agencies and the formation of public policy. Prerequisite: 231.

435-4 Government and Business. An historical study, with contemporary emphasis upon relations between government and economic institutions. Prerequisite: 231 or consent of instructor.

436-3 Government and Labor. (See Economics 436.)

438-4 Social Welfare Legislation. The Social Security Act and other legislation of major significance for the welfare and maintenance of the family, the handicapped, children, and other special groups. Their relationship to the legal structure of federal, state, county, township, and municipal welfare facilities and institutions with indications of economic and social consequences. Prerequisite: consent of instructor.

440-4 Public Personnel Administration. An analysis of some of the central

problems encountered by the government executive in recruiting, maintaining, and developing personnel, such as political neutrality, leadership and motivation, career development, security regulations, and the role of personnel in policy planning and execution. Prerequisite: 360.

441-4 Philosophy of Politics. (See Philosophy 441).

450-12 (4,4,4) Latin American Governments. The countries covered are (a) those of the Caribbean area; (b) those of South America; (c) this section deals with the governmental relations between the United States and the Latin American nations.

452-4 Governments and Politics of Sub-Sahara Africa. A study of the governments and politics of the former and present British and French territories: Ghana, Nigeria, Kenya, Guinea, Congo, Senegal, etc. Prerequisite: GSB 390 or consent of instructor.

453-12 (4,4,4) The Government and Politics of the Soviet Union. An intensive study and research exercise in communist government and politics. Prerequisite: 390b or consent of instructor.

454-8 Development of German Democracy. Offered cooperatively by Southern Illinois University and the University of Hamburg. Involves a summer's residence in Hamburg, Germany, and study under professors of the two cooperating universities. Prerequisite: consent of the American professor.

455-4 Major Governments of Western and Central Europe. A comparative study of the political systems of the major countries of Western and central Europe. Prerequisite: GSB or Government 390 or consent of instructor.

456-4 Great Britain and the British Empire. A survey of the governmental institutions and practices within the British Commonwealth, with particular attention to the political systems of Australia, Canada, and South Africa. (The governments of India and Pakistan are treated in 458.) Prerequisite: GSB 390 or consent of instructor.

457-8 (4,4) Government and Politics in the Near and Middle East. Iran, Iraq, Syria, Lebanon, Egypt, Jordan, Saudi Arabia, etc. Prerequisite: GSB 390 or consent of instructor.

458-12 (4,4,4) Government and Politics of Asia. (a) Burma, Thailand, Malaya, Indochina, Indonesia, Philippines; (b) China, Japan, Korea, Formosa; (c) India, Pakistan, Ceylon. Prerequisite: GSB 390 or consent of instructor.

461-4 Organizational Theory and Public Administration. Analysis of various theoretical approaches to public administration with emphasis on recent American literature in this field. Prerequisite: 360 or consent of instructor.

462-3 Intergovernmental Relations.

463-3 Government, Social, and Economic Policy. Explanation of contemporary agencies of policy determination within the national government; attention to methods and devices utilized to effectuate national social and economic policy within the federal system; appraisal of historical developments, trends, and results as they affect American governmental, constitutional, and political philosophy, public administration, and the general welfare. Prerequisite: GSB 211c or consent of instructor.

464-3 Regulatory Administration. A study of the work of the major regulatory commissions of the national government. Prerequisite: 360 or consent of instructor.

466-3 State Government and Administration. Leading problems of government and administration of American states. Prerequisite: 232.

467-4 Municipal Government and Administration. Development and functioning of city government in the U.S. Prerequisite: 232.

469-3 Administration of State and Local Finance. An examination of the administrative problems connected with local and state revenues and expenditures in the U.S. Prerequisite: 232.

470 Urban Planning. (See Geography 470).

471-4 The Organization and Administration of American Foreign Policy. An advanced course dealing with the organizational and administrative aspects of American foreign policy. Prerequisite: 243 or 371.

472-4 International Organization. Development and organization of international government and administrative systems, with emphasis on the United Nations. Prerequisite: GSB 303.

475-8 (4,4) International Law. Rules and practices governing the nations in their relations in peace and war. Prerequisite: GSB 303.

478-4 International Politics. A study of the interplay of political forces in

the international community. Particular emphasis will be placed on war-time diplomacy, peace treaties, the alignments and conflicts of power in the post-war period. Prerequisite: GSB 303 or consent of instructor.

480-4 The Pacific and the Far East. Political and strategic problems in this area. Prerequisite: GSB 303 or History 370.

484-8 (4,4) History of Political Theories.

485-4 Renaissance and Rationalists Political Theories.

487-6 (3,3) American Political Ideas. An historical study of the political ideas of leading American statesmen and publicists, and their resulting influence upon our governmental system. Prerequisite: 305 or GSB 385.

488-9 (3,3,3) Recent Political Theory. (a) The outstanding Anglo-American liberal political theorists from John Stuart Mill to the present; (b) The outstanding "scientific" political theorists from Karl Marx to the present; (c) The outstanding idealistic and nationalistic political theorists from Hegel to the present. Prerequisite: GSB 385 or 390.

495-8 (4,4) American Constitutional Law. (a) Constitutional law of the United States with emphasis upon cases dealing with the framework of our federal system; (b) American liberties. Prerequisite: 231.

497-4 Administrative Law. Law as it affects public officials in carrying out the rights, duties, and necessary functions of the public office. Prerequisite: 360.

498-4 Jurisprudence. (Theories of Law.) Major schools in legal thinking. Positive law and natural law. Idea of justice and concept of natural rights. Prerequisite: 231.

499-4 Scope and Method of Government. Practical training in research and writing techniques in the field of government. Bibliographical materials, footnotes, use of law library facilities, and government documents. Required of all beginning graduate students.

500-4 Methods of Empirical Research.

501-525 Seminars.

501-2 to 9 Seminar in Contemporary Legislation.

502-2 to 9 Seminar in Governmental Problems.

503-2 to 9 Seminar in Pressure Groups.

505-2 to 9 Seminar in Political Parties.

506-2 to 9 Seminar in Political Behavior.

508-2 to 9 Seminar in International Relations.

509-2 to 9 Seminar in International Organization.

510-2 to 9 Seminar in State Government.

511-2 to 9 Seminar in Local Government.

512-2 to 9 Seminar in Public Administration.

513-2 to 9 Seminar in Constitutional Law.

515-2 to 9 Seminar in Comparative Constitutions.

516-2 to 9 Seminar in Municipal Administration.

517-2 to 9 Seminar in Problems in Political Theory.

520-2 to 9 Seminar in American Foreign Policy.

521-1 to 12 Readings.

525-2 to 9 Seminar in International Law.

530-4 to 12 Internship in Public Affairs.

595-2 to 12 Individual Research.

598-1 Teaching Government.

599-1 to 9 Thesis.

600-1 to 48 Dissertation.

Guidance and Educational Psychology

305-4 Educational Psychology. Study of the learner and the learning process. Includes study of behavior, discipline, development, the school environment, application of learning theories, and methods of assessment. Prerequisite: GSB 201c.

412-4 Mental Hygiene. A survey of principles concerning factors and conditions in personal life that tend to facilitate or deter mental health. Mental health viewed as living creatively in an atmosphere of satisfactory interpersonal relations. Prerequisite: 305.

422-12 (4,4,4) Educational Measurement and Statistics. (a) Study of the theory and techniques of measurement. Special attention to the construction

and use of teacher-made tests; (b) The statistics needed by teachers for classroom use, the reading of educational literature, and informal educational research; (c) Study of standardized tests and other measuring devices to reveal individual and group characteristics. Emphasizes application and interpretation for counseling, education, and research purposes. Prerequisite: 305. **426-4 Individual Inventory.** Principles and procedures for studying individual pupils and their problems, for guidance purposes. Emphasis on interview, observation, ratings, case study, cumulative record, etc. Prerequisites: 422b, 442.

442-4 Basic Principles of Guidance. Introductory course on student personnel services. Survey of philosophy, principles, and organization of guidance services. Prerequisite: 305.

475-4 Implementation of Guidance Principles In the Public Schools.

481-1 to 6 Seminar. Conducted by staff members and/or distinguished guest lecturers on pertinent topics. Prerequisite: Consent of instructor.

485-4 to 9 Workshop in Educational Utilization of Community Resources.

501-2 to 6 Special Research Problems.

502-4 Measurement and Evaluation of Products and Procedures.

503-4 Tests and Measurements in Business Education.

511-4 Educational Implications of Learning Theories.

515-4 Psychological Aspects of Education.

520-8 (4,4) Educational Statistics and Experimental Design.

525-4 School Behavior Problems and Their Prevention.

526-4 Techniques in Individual Guidance.

528-4 Advanced Guidance of the Individual.

536-8 (4,4) Individual Measurement and Appraisal.

537-12 (4,4,4) Counseling Theory and Practice.

541-4 Occupational Information and Guidance.

543-4 Guidance through groups.

545-2 to 4 Seminars (selected areas with 2 to 4 hours in each).

545m-4 Doctoral Seminar in Psychological Foundations of Education.

562-8 (4,4) Human Development in Education.

565-4 Psychology of Elementary School Subjects.

566-4 Psychology of Secondary School Subjects.

575a-1 to 12 Practicum in Counseling.

575b-1 to 12 Practicum in Elementary Guidance.

575c-1 to 12 Practicum in Secondary Guidance.

575e-1 to 12 Practicum in College Student Personnel Work.

581a-1 to 12 Internship in Counseling.

581b-1 to 12 Internship in Elementary Guidance.

581c-1 to 12 Internship in Secondary Guidance.

590-2 Seminar in Behavioral Foundations.

596-5 to 9 Independent Investigation.

599-3 to 9 Thesis.

600-1 to 48 Dissertation.

Health Education

300-3 Communicable Disease. A study of the communicable diseases with emphasis on control and principles of prevention, and application of these principles to the individual school and community.

301-4 Health Education Concepts, Advanced. A survey of health sciences applied to healthful living. The dynamics of health and environment, behavior fitness, disease, addiction, habituation and population control.

302s-4 Driver Education and Training. To prepare the college student for teaching driver education and training in the secondary school. Prerequisite: a valid driver's license.

305-4 Principles and Foundations of Health Education. Introduction to philosophy and history of health education as well as functions of the school health department and voluntary agency interaction in the health education program. Prerequisite for all 300 and above.

310-4 Home Nursing. Theory, practice, and demonstration concerning equipment, care of patient and sick room, maternity and child care, recognition of common symptoms of disease, administration of simple treatments.

311-4 Child Development. Physical development of the child beginning with

the study of pregnancy, prenatal and maternal care continuing with overview of development from birth through puberty.

312-4 Emotional Health. Concepts of positive emotional health as related to teacher and parent in terms of influences on the child in the classroom and community.

313s-4 Introduction to Safety Education. Prepares for safety education in the public schools. Concerns safety as a social problem, development of safety skills, accident causes, teacher liability, research in the field.

323s-4 Methods and Materials in Safety Education. To acquaint student with material aids and methods, techniques in the teaching of safety education at elementary and secondary school levels.

325-3 Community Health Problems. Problems of a community health nature are treated and methods outlined to meet the problems. Areas include community health organization, problems of the environment, food, sanitation, and disease. Epidemiological process stressed.

330-4 Consumer Health. Legislation on state and federal levels affecting the health of the consumer; official agencies serving as watchdogs of consumer health; non-official agencies (AMA, CU, etc.) doing the same job; health and medical protection in the form of insurance, group practice, prepayment, etc.; health hazards of the space age; false and misleading information and advertising in health and medicine; cultists and faddists and their effect on the health of the consumer; media and publications and consumer health.

334s-4 First Aid. Red Cross First Aid Course with lectures, demonstrations, and practical applications. Red Cross Instructor's Certificate given.

350-4 Health Education Methods and Materials for Elementary Teachers. Designed to show the prospective teacher fundamental processes, techniques, and material aids involved in elementary school health teaching.

355-4 Introduction to Public Health. Philosophy, organization, administration, and functions of federal, state, and local, official and voluntary public health agencies. Periodic field trips involved.

356-5 Public Health II. An examination of specific public health problems and measures of control. Intended for health science students only.

365-4 Problems of Health Education in the Public Schools. Study and observation of existing health education problems in the public schools; of recent developments in education and their influences upon the school health program.

376-4 Workshop in Health and Nutrition. (Same as Food and Nutrition 376.)

400-4 Health Appraisal of School Children.

405-3 Methods and Materials in Social Hygiene.

413s-4 Safe and Healthful Living Outdoors.

415s-3 to 4 Workshop in Driver Education and Traffic Safety.

443s-4 Methods and Materials in Driver Education.

450-4 Health Education in the Elementary School.

460-4 School Health Programs.

461-4 to 8 Workshop in Health Education.

462-4 Health Education Workshop.

463-1 to 4 Workshop in Health Education with Emphasis in Disaster Preparedness.

464-4 Workshop in Alcohol Education.

471-4 Organization, Administration and Curriculum in School Health.

475s-3 Traffic Law Enforcement and Planning.

480s-4 Workshop in Safety Education.

481s-4 Safety Education Workshop.

485-4 International Health. A survey and analysis of the health beliefs, values, and practices of peoples in other cultures, with particular attention to how these beliefs and practices fit into a total way of life. An international orientation of potential value to both prospective teachers and students in other fields.

488-4 Educational Aspects of Environmental Sanitation.

489-4 Introduction to Vital Statistics.

490-2 to 8 Field Work in School and Community Health.

491-4 Health Teaching Methods-Advanced. An intensive study of and practice at various dimensions of teacher-student relations in the classroom with emphasis on the multiple roles of the teacher. Prerequisites: 305, 471 or consent of instructor.

500-4 Community Organization for Health Education.

- 510-4 Construction of the Curriculum in Health Education.
- 511-5 Practicum in Health Education Workshop.
- 515-4 Review Current Literature in Health Education Public Health and Safety Education.
- 520-4 to 6 Special Projects.
- 525-4 Organization Administration and Supervision of Safety Education.
- 526-4 Evaluation in Health Education.
- 530-4 Problems and Research in Accident Prevention.
- 533-12 (4,4,4) Human Conservation.
- 536-4 Professional Preparation in Health Education.
- 590-4 to 12 Field Internship.
- 597-3 (1,1,1) Seminar.
- 599-3 to 9 Thesis.
- 600-1 to 48 Dissertation.

Higher Education

- 402-2 Careers in Higher Education. An exploratory course designed to acquaint the student with the career possibilities and functions of higher education.
- 510-4 Higher Education in the United States.
- 512-4 Higher Education in Selected Nations.
- 513-4 Organization and Administration in Higher Education.
- 515-4 College Student Personnel Work: Operations and Policies.
- 516-4 College Student and College Culture.
- 518-4 College Teacher and College Teaching.
- 522-1 to 12 Readings in Higher Education.
- 523-1 to 12 Internship in Higher Education. (Selected areas.)
- 524-2 to 6 Individual Study.
- 535-2 to 28 Higher Education Seminar I.
- 545-3 to 15 Higher Education Seminar II.
- 551-4 Curriculum Design and Policy.
- 555-4 Philosophy of Higher Education.
- 565-4 The Community-Junior College.
- 578-4 Economic Aspects of Higher Education.
- 589-4 to 6 Advanced Research.
- 599-1 to 9 Thesis.
- 600-1 to 48 Dissertation.

History

- GSB 300-9 (3,3,3) History of the United States.
- 304-9 (3,3,3) History of the Ancient World. (a) The Near East; (b) Greece; (c) Rome. May be taken individually or in any sequence.
- 308-3 History of Illinois. The history of the state from 1818 to the present. Recommended for students with a concentration in history and those who expect to teach in elementary schools.
- 309-4 The Negro in America. The role of the Negro in America from the seventeenth century to the present with emphasis on the period since 1865.
- 312-3 Central Europe in the Nineteenth Century. An analysis of the rise of nationalism with emphasis on Germany and Italy and of the problems of the Austro-Hungarian Monarchy. Prerequisites: GSB 101b,c.
- 322-12 (4,4,4) English History. (a) Britain to 1603; (b) 1603-1815; (c) since 1815. May be taken individually or in any sequence.
- GSB 323-3 East and West in the 20th Century—Origins and Prospects.
- 330-3 The Revolution and the Constitution. A study of the conflicting forces which produced the American Revolution, led to the creation of the federal union and shaped the early republic.
- 332-9 (3,3,3) Medieval History. (a) Early Middle Ages, 500-1000, (b) High Middle Ages, 1000-1300, (c) Late Middle Ages, 1300-1500. Prerequisite: sophomore standing.
- 352-9 (3,3,3) History of Latin America. (a) Colonial Latin America; (b) Independent Latin America; (c) Latin America in World Affairs. May be taken individually or in any sequence.

- 365-4 History of Chinese Civilization.** A study of the march of Chinese civilization from prehistoric times to the present, stressing social structure, government institutions, and intellectual movements.
- 367-6 (3,3) History of the Far East.** (a) Introduction to 1800; (b) 1800-1945. May be taken singly or in either sequence.
- GSB 369-3 The Contemporary Far East.**
- 372-6 (3,3) History of Russia.** (a) To 1905; (b) Since 1905. May be taken individually or in any sequence. Prerequisite: GSB 101b,c.
- GSB 380-6 (3,3) East Europe.**
- 401-6 (3,3) History of the South.** (a) The Old South; (b) The New South. An intensive study of the social, economic, political and cultural developments of the South.
- 405-3 The American Civil War.** Emphasis upon the clash of national and sectional interests; economic, political, and military aspects of the conflict. Prerequisite: GSB 300b, or consent of instructor.
- 410-2 to 5 Special Readings in History.** Supervised readings for students with sufficient background. Registration by special permission only. Offered on demand.
- 411-9 (3,3,3) Social and Intellectual History of the United States.** (a) 1607-1830; (b) 1830-1900; (c) 1900 to present. The development of American society and a study of various types of economic, social, and political thought that have influenced it.
- 414-9 (3,3,3) Intellectual History of Modern Europe.** (a) The Enlightenment; (b) The 19th century; (c) The 20th century.
- 415-9 (3,3,3) Early Modern Europe.** (a) Renaissance; (b) The Reformation; (c) Age of Absolutism. Prerequisite: GSB 101b,c.
- 417-9 (3,3,3) Advanced English History.** (a) The Empire-Commonwealth; (b) Constitutional History; (c) English Culture in the Age of American Colonization; (d) Tudor England.
- 420-3 The French Revolution.** A sketch of the passing of feudalism in France, the background and development of the revolutionary movement, and the Napoleonic period.
- 421-9 (3,3,3) Europe in the Nineteenth Century.** (a) 1789-1815, (b) 1815-1870, (c) 1870-1900. An advanced survey emphasizing economic, social, and intellectual developments.
- 425-6 (3,3) American Colonial History.** (a) Discovery and Settlement; (b) British Imperial structure-American independence.
- 430-9 (3,3,3) Late Modern Europe.** (a) Age of Revolution, 1815-1880; (b) 1880-1918; (c) Since 1918. Age of Dictatorships.
- 431-9 (3,3,3) Europe in the Twentieth Century.** (a) 1900-1919, (b) 1919-1939, (c) 1939 to present. An advanced survey emphasizing economic, social and intellectual developments.
- 435-12 (3,3,3,3) Advanced American History.** (a) 1865-1896, (b) 1896-1919, (c) 1919-1939, (d) 1939 to present. Prerequisite: GSB 300-9.
- 440-6 (3,3) History of American Diplomacy.** (a) To 1913; (b) 1913 to present. A study of the important treaty relations of the United States, and a general consideration of American foreign policies. Prerequisites: GSB 300a,b, or consent of instructor.
- 442-9 (3,3,3) History of the West.** (a) Colonial; (b) Trans-Allegheny; (c) Trans-Mississippi.
- 448-3 Introduction to the History of Southeast Asia.** A survey from the earliest times with emphasis on the recent and contemporary developments.
- 449-3 Development of Afro-Asian Nationalism.** A study of the rise of national movements, the winning of independence, and the vast array of political and economic problems since independence.
- 451-3 Historiography.** Development of history as a written subject, including works and philosophy of the various historians in ancient, medieval, and modern periods.
- 452-3 Historical Research and Thesis Writing.** The rules of historical research studied and applied to a definite topic. (For concentrations in history only.)
- 455-3 History of Inner-Asian Relations.** Tribes, migrations, wars, and power politics in Central Asia and outlying areas of China from Han times through 19th century rivalries to latest developments along the Sino-Soviet frontier.
- 460-9 (3,3,3) Social and Intellectual History of the Middle Ages.** (a) 500-1000; (b) 1000-1250; (c) 1250-1500.

- 470-3 **Argentina, Brazil, and Chile.** A narrative and comparative study of the independent era of the history of the three leading states of South America.
- 471-6 (3,3) **History of Mexico.** (a) 19th century; (b) 20th century. Significant political, economic, diplomatic, social, and cultural aspects of Mexican life from independence to modern Mexican life.
- 473-6 (3,3) **The Caribbean Area.** (a) In the 18th and 19th centuries, (b) in the 20th century.
- 475-6 (3,3) **Dictatorships in Latin America.** (a) the 19th century; (b) the 20th century. A political, economic, social and military study of the domestic and international aspects of dictatorship. Prerequisite: Junior standing or higher.
- 500-12 to 30 (4 to 10 each) **History Seminar.** (a) American history; (b) European history; (c) Latin American history.
- 510-2 to 5 **Readings in History.**
- 511-3 **Studies in the Middle Ages.**
- 512-3 **Studies in Nineteenth Century Europe.**
- 514-3 **Studies in Asian History.**
- 515-3 **Current United States History and Problems.**
- 516-4 **Studies in Contemporary Europe.**
- 517-3 **Constitutional History of the United States and Problems.**
- 518-3 **England in the Age of the "Glorious Revolution."**
- 519-6 (3,3) **The Age of Jefferson.**
- 520-6 (3,3) **Sectionalism and Reform.**
- 553-3 **New Viewpoints in American History.**
- 574-3 **United States-Mexican Relations.**
- 575-9 (3,3,3) **Studies in Latin American History.**
- 598-3 (1,1,1) **Teaching History in College.**
- 599-1 to 9 **Thesis.**

Home and Family

- 227-3 **Family Living.** A study of relationships and adjustments in family living, designed largely to help the individual.
- 237-3 **Child Development.** Principles of development and guidance of children as applied to home situations. Directed observation involving children of varying ages.
- 300-3 **Home Economics for Men.** Units dealing with food selection, serving, and table practice; economics of the home; grooming and clothing selection; family relations; consideration of personality evaluation. Field trip.
- 301-3 **Home Arts and Social Usage.** Emphasis on the home arts and social usage that will provide for more satisfying personal and family living. For women who are not concentrating in home economics.
- 302-4 **Basics of Family Living.** Job oriented course for social welfare workers; selected units in several aspects of homemaking with application to the low income family.
- 323-2 **Housing.** Housing needs of families. Housing design, plans, and construction. Historic modes of housing.
- 324-3 **Equipment.** Selection, use, and care. Field trips.
- 331-3 **Management of Family Resources.** A study of factors affecting the management of the home in meeting the needs of individuals and creating a satisfying environment for the family. Special consideration given to those problems involving the use of time, money, and energy.
- 332-4 **Home Management Residence.** Six weeks' residence in Home Management House, with actual experience in different phases of homemaking. Field trip. Prerequisites or required concomitants: 227, 331.
- 341-4 **Consumer Problems.** Study of motives of consumption, family income and expenditures, selection of commodities and services, buying and selling practices, and evaluation of consumer aids. Consideration of contemporary consumer problems. Field trips.
- 345-5 (2,3) **Child Development Practicum.** Observation and participation in the guidance of pre-school children. (a) Preparation and use of materials; equipment and activities. One hour lecture, 2 hours laboratory; (b) Planning and executing a variety of experiences for preschool children. One hour seminar, 3 hours laboratory. Part b may be elected independently of a.
- 366-3 **Family Development.** Study of changing patterns in family living

throughout the family life cycle. Prerequisites: 227 or GSB 341.

407-2 to 8 Workshop. Designed to aid workers in professions related to home and family. Emphasis for the workshop will be stated in the announcement of the course.

423-4 Advanced Family Housing. Further appreciation and understanding of aesthetic, economic, psychic, and social factors influencing choice of family housing today. Prerequisite: 323 or consent of instructor.

424-4 Selection, Use, and Care of Appliances. Materials used in equipment, methods of construction, principles of operation of appliances for cooking, refrigeration, laundering, cleaning; selection, operation, and care of appliances to obtain maximum satisfaction in use. Prerequisite: 324 or consent of instructor.

435-4 Work Simplification in Home Management. Basic scientific work simplification principles applied to work done in the home by full-time, employed or physically handicapped homemakers.

456-4 Infant Development. Current theories and knowledge concerning growth and development of infants with related laboratory and field experiences. Prerequisite: 237 or Psychology 301 or equivalent.

466-2 Practicum in Parent-Child Study. Designed to increase student's ability to work with parents and parent groups through an awareness of factors in the parent-child relationship and knowledge of current research and methods in parent education. Integration with infant and child development laboratories and related field experience. Prerequisites: 227, 237 or equivalent.

471-2 to 6 Field Experience. Opportunity for supervised learning experiences in selected areas. Prerequisite: Consent of departmental chairman.

481-2 to 6 Readings. Supervised readings for qualified students. Prerequisite: consent of instructor and chairman.

500-4 Research Methods.

540-4 Trends in Consumer Problems.

550-4 Advanced Home Management.

556-4 The Pre-School Child.

562-4 Child Development Through Home and School.

566-4 Interpersonal Relationships Within the Family.

571-4 Recent Research.

572-2 to 8 Special Problems.

599-5 to 9 Thesis.

600-3 to 48 Dissertation.

Home Economics

The Home Economics Honors courses are listed below. In each course, the subject matter depends upon the needs and interests of the students.

305-2 to 6 Home Economics Honors Seminar.

306-2 to 6 Home Economics Honors Seminar.

387-2 to 8 Special Problems-Honors.

388-2 to 8 Research and Investigations-Honors.

Home Economics Education

111-2 Home Economics Orientation. Surveying professional opportunities in home economics; planning for the development of personal and professional proficiencies.

306-2 Seminar and Readings in Home Economics Education. A philosophical approach to the field of home economics. Social, psychological, anthropological, economic considerations as held by home economists and others in relation to the professions in the field of home economics and for homemaking in a democratic society. Offered alternate years.

307-3 Methods of Teaching for Dietetics Majors. Designed as preparation for the teaching role of the dietitian. Selection and organization of materials. Practice in using a variety of techniques and teaching aids. Offered alternate years.

309a-3 Program Planning in Home Economics. Philosophy; the total vocational program in home economics education; developing files. Student should

register for 313-1 concurrently or prior to 309 for the pre-student teaching and September Field Experience. Prerequisite or concurrently Guidance 305; Secondary Education 310.

309b-3 Methods of Teaching in Home Economics. Curriculum, unit and lesson planning, methods, techniques, and teaching aids; completing files. Prerequisite: 309a. To be taken the quarter preceding student teaching.

310-4 Evaluation and Adult Education. Using and developing instruments for evaluation with respect to goals of a family-community centered home-making program and preparing students to carry on adult education. Prerequisites: 309 and Secondary Education 352b concurrently.

313-2 to 4 Special Problems. For students recommended by their chairman and approved by the chairman of their department and the instructor in charge for independent, directed study. Prerequisite: 309.

370-5 History, Development, and Principles of Extension Work. A study of the history, development, organization, and purposes of extension work. Discussion of problems and principles of conducting and administering extension work in home economics. Field trips. Offered alternate years.

371-6 Field Experience. Six weeks of observing and assisting a county home adviser. Opportunity for supervised learning experiences in various phases of extension work. Prerequisite: 370.

414-4 Home Economics for Elementary Teachers. Units of work in nutrition, school lunches, family and social relationships, textiles, and clothing.

415-1 Introduction to Graduate Study. Seminar to orient the student to graduate work through relation of courses to goals of program, standards of work, habits of thinking, communication of ideas, uses of professional materials and publications. Required. Students should take at first opportunity.

481-2 to 6 Readings. Supervised readings for qualified students. Prerequisite: consent of instructor and chairman of department.

500-4 Research Methods.

505-4 Home Economics in Secondary Schools.

506-4 Evaluative Procedures in Home Economics.

507-2 to 8 Workshop.

510-4 Supervision of Home Economics.

510a-1 to 4 Practicum in Supervision.

515-4 Trends in Home Economics Education.

516-4 Advanced Methods of Teaching Home Economics.

517-4 Methods and Materials for Adult Programs in Home Economics.

571-4 Recent Research.

572-2 to 8 Special Problems.

573-1 to 6 Seminar: Research in Home Economics.

599-5 to 9 Thesis.

600-3 to 48 Dissertation.

Industrial Technology

212-9 (3,3,3) Wood Science and Technology. (a) Wood science; a study of the structure and properties of wood; (b) New wood products and their industrial uses; (c) Modern industrial processes in wood technology including plant layout and production management. Laboratory. Must be taken in a,b,c sequence. No prerequisite.

300-12 (4,4,4) Plastic Materials and Processes. (a) An introduction to the general field of plastics. History, development, commercial materials, and processing will be explored; (b) Thermoplastics, including a study of the materials, equipment, design, tooling, and techniques of forming; (c) Thermo-setting plastics and specialized processing and converting, including advanced techniques and experimental development with all types of plastics. Laboratory. May be taken in any sequence. Prerequisite: GSA 101b.

304-9 (3,3,3) Architectural Drafting and Design. (a) Basic room planning, analysis of family needs, utilization of building sites, and developing preliminary plans; (b) Preparation of house plans, including elevations, details, plot plan, and service plans; (c) Advanced residential planning and designing; standards, codes, specifications, and research. Laboratory. Must be taken in a,b,c sequence. Prerequisite: one course in high school drafting or sketching.

305-9 (3,3,3) Technical Illustration. (a) Basic pictorial illustration, axonometric projection methods and rendering; (b) Basic pictorial illustration,

perspective projection methods and rendering; (c) Idea computation, detail, assembly, oblique, diagrammatic and axonometric sketching, manufacturing, maintenance, and assembly illustration. Integrated system schematics. Laboratory. Must be taken in sequence. Prerequisite: Technology 101a.

306-9 (3,3,3) Industrial Design. (a) Basic design with industrial materials. (b) Advanced design problems with opportunity for concentration in one or two areas of industry; (c) Applied industrial design through cooperative arrangements with industry. Laboratory. Must be taken in sequence. Prerequisite: Technology 101a.

309-12 (4,4,4) Graphic Arts. (a) An introduction to the basic fundamentals of graphic arts such as layout, type composition, presswork, bookbinding, silk screen and linoleum block techniques; (b) Continuation of fundamentals with special emphasis on typographic design, further experiences in letterpress, lithography, copy preparation, and plate making. Laboratory. Must be taken in sequence. Prerequisite: one course in drafting.

312-9 (3,3,3) Wood Products and Processes. (a) Introduction to processing of wood materials and use of the basic industrial tools and machines; (b) Industrial jigs and fixtures of the wood industry and their use in production techniques; (c) Custom design and fabrication with wood materials and research on industrial technology in processing. Laboratory. Must be taken in sequence. Prerequisite: one course in drafting.

314-9 (3,3,3) Casting and Metal Forming Processes. (a) Analysis of sand, permanent mold, die casting, investment, shell mold and centrifugal casting processes including mold cavity design, testing instrumentation, and production equipment; (b) Process analysis of fundamental metal forming techniques—shearing, bending, drawing, coining, embossing, spinning, and lancing. Advanced instruction in the newer techniques of explosive, ultrasonic, and electro-discharge forming and powder metallurgy; (c) Analysis of the hot and cold forging processes; basic ferrous and non-ferrous material processes such as extrusion, rolling, wire drawing, continuous casting, and tubing. Lecture, laboratory. Prerequisite: Mathematics 111a or equivalent. Sequence preferred but not required.

316-9 (3,3,3) Industrial Covering. (a) Basic materials and processes used in surface coverage and decoration of forms, frames and bodies; (b) Fabric and plastic material and processes used on firm and cushioned surfaces; (c) Techniques and processes in flat surface coverings such as plastics, ceramics, metal, etc. Laboratory. May be taken in any sequence. No prerequisite.

318-9 (3,3,3) Industrial Welding. (a) Fundamentals in the techniques, care and use of oxyacetylene and electric arc welding and flame-cutting equipment on the common metals; (b) Advanced instruction in the use of oxyacetylene, electric arc, inert gas, and special procedures used in fabricating ferrous and nonferrous metals and alloys; (c) Theory of fundamental welding processes including design, strength, and production equipment. Advanced instruction in electron beam, laser, and ultrasonic welding. Other metal joining techniques such as riveting, stitching, adhesive bonding, brazing and soldering. Lecture, laboratory. No prerequisite.

320-12 (4,4,4) Industrial Crafts. (a) Basic designing, decorating, and fabricating of a variety of craft materials such as reed, textiles, plastics, leather, ceramics, wood, and metal; (b) Continuation of basic fundamentals with special emphasis on art metal techniques and processing; (c) Emphasis upon creative design and new techniques with all craft media, but special emphasis on leather and industrial fabrics. Laboratory.

322-9 (3,3,3) Machining of Metals. (a) Introduction to machine shop theory and practice: provides practice and information in using the basic machine tools; (b) Provides techniques and information in using basic and specialized machine tools; (c) Provides additional procedures and information in the use of specialized machine tools with emphasis on production problems. Laboratory. Must be taken in sequence. Prerequisite: one course in drafting.

325-9 (3,3,3) Metal Removal Processes. (a) Automatic and specialty production equipment systems and the newer metal removal techniques of chemical, electro-discharge, and ultrasonic machining. Production analysis for economy, quality and service; (b) Machineability criteria—the interrelationship of speed, tool geometry, cutting forces, surface finish, cutting temperature, horsepower, geometric tolerances, cutting materials, work materials, depth of cut, feed and economics. Properties and structure of carbide, high speed steel, ceramic, diamond and abrasive cutting materials; (c) Numer-

- ically controlled production. Lecture, laboratory. Sequence preferred but not required. Prerequisite: Mathematics 111a.
- 327-9 (3,3,3) Materials, Processes, and Fabrication of Metals.** (a) Study of the basic tools, materials and processes used in a number of metalworking areas; (b) Designing, planning and fabrication of metal products; industrial processes and mass production applications; properties of metals; (c) Basic processes, materials, and equipment in forming, fabrication, and decorating of metal products with special emphasis on the nonferrous metals and alloys. Laboratory. May be taken in any sequence. Prerequisite: one course in drafting.
- 332-9 (3,3,3) Power Mechanics.** (a) An introduction to the fundamentals of power development, generation, and transmission, including such areas as heat engines, hydraulics, wind, electrical levers, and gears; (b) Continuation of fundamentals of power with special emphasis on fuel type engines, their design, construction, operating principles, and major operating systems; (c) Automotive internal combustion engines, chassis and power transmission. Emphasis on construction, operation and care. Laboratory. Must be taken in sequence. No prerequisite.
- 337-9 (3,3,3) Manufacturing Processes.** (a) Properties and structure of metals and plastics. Fundamental principles of the casting and forming processes. Fundamental principles of metal removal, metal joining, and metrology; (b) A study of fabrication, assembly, and methods of manufacture with emphasis on machine tools, automatic machines, and correlation of design with materials and processes; (c) Application of physical and chemical principles in the solution of industrial process problems. Material and energy balance. Introduction to equilibrium and rate relations. Economic factors. Lecture, laboratory. No prerequisite.
- 341-9 (3,3,3) Maintenance, Layout and Material Handling.** (a) Care, repair, sharpening, and maintenance of cutting tools, hand tools, portable power tools, and machine tools. Prerequisite: 312a, 327a; (b) Preventative maintenance procedures, maintenance shop organization, and equipment maintenance problems; (c) Fundamentals of plant layout and materials handling. Prerequisite: junior standing.
- 342-9 (3,3,3) Industrial Finishes.** (a) Methods, tools, and equipment used in finishing the common industrial materials; surface preparations; application procedures, types of finishes; and restoring and refinishing techniques; (b) Industrial materials, processes and equipment used in applying protective and decorative coatings; spraying techniques and testing procedures used on industrial finishes; (c) Composition, properties, and performance of industrial finishes, metallic and organic coatings; management and theory of colors; and new industrial finishing processes. Laboratory. Must be taken in sequence. Prerequisite: 312a, 327a.
- 343-9 (3,3,3) Electricity-Electronics.** (a) An introduction to electricity and electronics; (b) Introduction to vacuum tubes and associated circuitry; (c) Advanced application of electronic theory with emphasis on electronic control circuits. Laboratory. Must be taken in sequence. No prerequisite.
- 345-9 (3,3,3) Industrial Electronics.** (a) Study of basic principles, concepts, and techniques in industrial application of electronics; (b) Analyses of complex circuits for fundamental principles and concepts which facilitate trouble shooting of industrial equipment; (c) Principles and concepts involved in multivibrators, oscillators, pulse generators and computer circuits. Laboratory. Must be taken in a,b,c sequence. Prerequisite: 343a.
- 351-9 (3,3,3) Product Control.** (a) Control of size and geometric specifications with emphasis on comparative gauges and work holding devices. Laboratory; (b) Quality control and inspection systems; (c) Production and inventory control systems with emphasis on cost analysis. Prerequisite: junior standing.
- 371-12 (4,4,4) Graphic Arts Technology.** (a) Machine composition, including keyboard operation, nomenclature, use, care, and operation of line-casting machines; (b) Offset lithography, including camera work, plate making, and press work; (c) Printing design, including type design, commercial layouts, color, papers, cover design folders, booklets, bookbinding, presswork, printing economics, advanced lithography, advanced machine composition, and advanced printing mechanics. Laboratory. Must be taken in a,b,c sequence. Prerequisite: 309a.

Instructional Materials

301-2 The Instructional Materials Approach to Learning. An introductory course to the study of instructional materials. A survey of the history of libraries and audio-visual centers; the complete range of materials of teaching with their unique and common characteristics; the background of the school instructional materials program.

308-4 Introduction to Cataloging. Organization of library materials for effective service. Acquisition, classification, cataloging, preparation, preservation, and circulation. Laboratory assignments.

400-2 Library Research Methods. Introduction to the use of library materials in graduate research. Includes a survey of scholarly publishing and the use of reference works in various subjects.

403-4 School Library Functions and Management. Effective library services in relation to the educational objectives of elementary and secondary school programs: organization, supervision, finance, housing, equipment, standards, and evaluation.

405-4 Library Materials for Children. Study of the aids, methods, and criteria for the selection and use of books and other instructional materials for children in the elementary schools. Open to juniors with consent of instructor.

406-4 Library Materials for Adolescents. A study of the aids, methods, and criteria for the selection and use of books and other instructional materials for students in the high school. Open to juniors with consent of instructor.

407-4 Basic Reference Sources. Evaluation, selection, and use of reference sources for elementary and secondary school libraries. Principles and methods of reference service.

410-4 Public Library Administration. The administration of municipal, county, and regional libraries, both large and small, with emphasis on meeting the needs of different types of communities.

413-4 Cataloging of NonBook Materials. The classification, cataloging, preparation and circulation of all types of nonbook materials such as films, filmstrips, slides, realia, etc. Prerequisite: 308.

417-4 Audio-Visual Methods in Education. Selection and utilization of instructional materials in the learning environment, elementary through adult levels. Audio and visual materials and procedures are emphasized with some attention given to bibliographies and reference books for teachers.

420-4 School Library Activities and Practice. Supervised practice and observation integrated with instruction in the typical activities of school librarianship: storytelling, publicity, developing units of library instruction, and work with students. Prerequisites: 308, 403, 405, or 406, 407.

440-2 Photography for Teachers. Techniques of picture-taking and the preparation of color slides of community resources for use in classroom instruction and for school public relations.

445-4 Preparation of Teacher-Made Audio-Visual Materials. Laboratory practice in the preparation of bulletin boards, opaque materials, models, slides, recordings, feltboards, and other graphic materials. Prerequisite: 417 or consent of instructor.

448-4 Supervision and Administration of an Audio-Visual Program. Provides professional information and training for anyone who has administrative responsibilities for an audio-visual program. For teachers, coordinators, or directors. Prerequisite: 417 or consent of instructor.

450-2 Classroom Teaching with Television. Classroom utilization of open and closed circuit television. Emphasis is placed on the changed role of the classroom teacher who uses television. Evaluation of programming, technicalities of ETV, and definition of responsibilities are included. Demonstration and a tour of production facilities are provided.

457-4 Radio and Television in the Classroom. Educational programs and their value to the teacher in the classroom. Sample tapes of radio programs and kinescopes are used.

458-4 The Medium of the Motion Picture. A study of the full range of expression by motion pictures including the documentary, theatrical, educational, experimental, and industrial films. Representative films are screened.

470-4 Program Automated Instruction. The principles and practices of writ-

ing both linear and intrinsic types of programmed instruction with emphasis on pictorial and performance branches. Individual experience in planning and producing programs.

510-4 **Mass Communications in Education.**

514-4 **Survey of Research and Development in Instructional Materials.**

523-4 **Seminar on Junior College Librarianship.**

530-4 **History of Books and Libraries.**

546-4 **Integration of Audio-Visual Materials in the Classroom.**

547-4 **School Film and Filmstrip Production.**

549-4 **Visual Learning.**

554-4 **Administration of an Instructional Materials Center.**

560-4 **Seminar in Instructional Materials.**

576-2 to 8 **Problems in Instructional Materials.**

599-5 to 9 **Thesis.**

600-1 to 48 **Dissertation.**

Journalism

100-1 **Current Events.** Contemporary events in the modern world and their treatment in the newspaper and periodical press. May not be counted toward the journalism concentration.

101-3, 102-3 **Introduction to Journalism, I, II.** Development of the newspaper and other media in America; role of the press in modern society.

103-3 **News.** Study of the newspaper story with experience in writing and rewriting news; the fundamentals of copyreading.

201-3, 202-3, 303-3 **News Writing and Editing I, II, III.** How to cover assignments and write news stories; preparation of copy for publication; writing headlines; laboratory exercises.

265-4 **Machine Composition.** (See Printing and Photography 265.)

297-3 **Introduction to Magazine Journalism.** The magazine as a journalistic medium. Its varied divisions in general circulation, professional, technical, industrial, and specialized publications. The nature and extent of magazine work: staff and free lance.

330-3 **Editorial Writing.** The work and responsibility of the editor and editorial writer with emphasis upon editorial writing and thinking. Editorial problems, methods, policies, and style.

345-3 **History of Journalism.** Development of American journalism with emphasis upon the struggle for freedom of the press, leading editors, outstanding newspapers and periodicals.

346-3 **Comparative Journalism.** Analysis of editorial and management policies and methods of American newspapers, with particular reference to economic and social factors affecting them.

350-3 **The Community Newspaper.** The small newspaper recognized as a distinct medium, performing a specialized function for its readers. Equal weight given to the problem of news presentation and to leadership with careful examination of news and editorial policies of representative newspapers.

351-3 **Community Newspaper Management.** Organization, operation, and policy of the revenue departments of the weekly and small daily newspapers with special attention to the circulation procedures, retail, general, and classified advertising problems, and other phases of management.

360-12 (4,4,4) **Publications Photography.** See Printing & Photography 360.

369-3 **Magazine Writing.** The writing of magazine articles by the free-lancer and staff member. Prerequisites: 103, 201, 202.

370-3 **Principles of Advertising.** Advertising fundamentals in relation to modern business activities; economic and social aspects, research, media, appeals, production, schedules. Prerequisite: Economics 205.

371-3 **Advertising Salesmanship.** Practical application of the principles of advertising copy and layout as related to the mechanics and psychology of space selling. Students engage in daily work with newspaper advertisers, handling specific assignments in various lines of business. Prerequisite: 370.

372-5 **Advertising Copy, Layout, and Production.** The principles and practices in the preparation of copy and layout for all types and forms of advertising, as well as study of the processes involved in the production of advertising.

373-3 **Advertising Media and Markets.** Manufacturers' advertising procedures

related to campaigns, markets and market research, media, and organization of the advertising function. Prerequisite: 370.

374-3 Advertising Policies and Problems. Application of advertising principles to merchandising, sales, promotion, research. Prerequisite: consent of instructor.

376-4 Advertising Campaigns. Application of advertising principles and skills to the solution of a specific problem; coordination of strategy and technique. Prerequisite: consent of instructor.

382-3 Newspaper Promotion and Circulation.

383-6 (3,3) Newspaper Production Management. Organization and function of the mechanical department; costs and cost accounting; personnel problems.

390-3 Advanced Reporting. Covering city council meetings, courthouse, city hall, courts, society, and other special assignments.

391-3 Feature Writing. How to plan and write newspaper features and special articles.

392-3 Reporting Special Events. Experience in planning and executing coverage of conventions, expositions, and tours; special editions; interpretative news stories.

393-3 Publicity Methods. Not open to students with concentration in journalism. Designed for students who do not plan a career in writing, but desire guidance and practice in writing for newspapers and magazines about their fields of specialization.

394-3 Agricultural Journalism.

396-3 Editorial Production. Practical work in details of planning and producing one or more issues of a newspaper. Field trips.

397-3 Special Publications. The function and operation of industrial, trade, and business publications. Relationships of management and personnel through the editorial policies and practices of such special publications.

398-3 Magazine Production and Layout. The editorial and production functions of the magazine. Application of the principles of article layout and makeup to editorial content. Relationships with printing production.

399-1 Senior Seminar. Contemporary newspaper policies as related to professional journalism. To be taken in the student's last quarter.

401-3 International Journalism. A study of the history, development, current status and implications of the press and news services of other countries, and their relationship to the international communications system.

420-2 to 4 High School Journalism Clinic. For public school teachers.

421-4 School Publications. Designed for the prospective journalism teacher or high school publication director. Deals with practical production problems of newspapers and yearbooks.

422-3 Teaching High School Journalism. Teaching methods of journalism in secondary schools, organization and course of study, bibliography, use of journalism courses for school publications production.

431-3 Public Relations. Study of current methods of planning and executing public relations policies; evaluation of media; preparation of campaigns.

432-3 Communication Agencies and Public Opinion. Press, radio, television, and motion pictures and their role in the opinion process.

433-3 Measurement of Public Opinion. The sampling survey as a research tool; survey methodologies.

440-3 Content Analysis. Theory and practice of various systems designed to reveal the orientation of editorial material in the mass media.

442-3 The Law of Journalism. Legal limitations and privileges affecting publishing, fair comment, criticism, contempt of court, right of privacy, copy-right, and legal provisions affecting advertising.

449-2 to 8 Practicum. Study, observation, and participation in publication supervision. Work required on *The Egyptian* newspaper.

479-3 Role of Advertising in our Society. An exhaustive analysis of the literature covering such topics as: definitions and scope of advertising; advertising and the press; advertising as a social and economic force; evaluation of advertising, policies as related to the practices of specific business firms.

495-3 Book Reviewing. Theory and practice in reviewing modern books; study of newspapers and magazines devoted entirely or in part to this type of journalism.

499-3 Summer Workshop in News Analysis in the Classroom. A study of the relationship of the newspaper to other high school coursework. Time spent in developing ways of integrating the newspaper in the classroom.

- 501-3 Literature of Journalism.
- 530-2 Seminar in Press Freedom.
- 532-4 Seminar in Public Opinion and Propaganda.
- 533-1 to 4 Research Problems in Journalism.
- 540-3 Philosophy of Journalism.
- 545-3 Studies in Journalism History.
- 590-3 Seminar in Journalism History.
- 595-0 Graduate Seminar.
- 599-1 to 8 Thesis.
- 600-1 to 48 Dissertation.

Management

- 170-4 Introduction to Business Administration. A survey of business, intended to give to the student a general knowledge of the modern business world, a better basis for choosing his specialty, and certain information not covered in the various specialized courses offered.
- 271-4 Business Writing. Principles and practice in writing typical kinds of business correspondence and reports. Prerequisite: GSD 101.
- 340-4 Business Organization and Management. Business organization, management theory, and practice. Prerequisite: junior standing or consent of instructor.
- 350-4 Management Control Systems. Systems theory and applications. Methods of establishing, analyzing, standardizing and controlling administrative systems. Work simplification, work-flow charting and systems control applications to organizational units. Prerequisite: 340 or consent of instructor.
- 361-4 Business Report Writing. Discussion, illustration, and practical application of report-writing techniques, including study of uses, forms, and structures of different types of reports. Prerequisite: GSD 101.
- 380-4 Production Management. Plant location, design, and construction; internal organization for operations, production control, stores control, routing of materials, job analysis, and time study; wage systems, subdivision of executive responsibilities and duties; methods of coordination and planning. Prerequisite: 340 or consent of instructor.
- 382-4 Time and Motion Study. Principles and methods for simplifying work and establishing sound time-standards for performance.
- 385-4 Personnel Management. Relations of the human element to production; the art of securing understanding and cooperation; employee organizations and outside activities; work of the personnel department; wage standards and working conditions. Prerequisite: 340 or consent of instructor.
- 430-4 Human Relations and Organizational Behavior. The study of human problems in administration; individual, group, intergroup and organizational behavior under dynamic environment conditions. Theory and case analyses. Prerequisite: 340 or consent of instructor.
- 431-4 Organization Theory and Practice. A study of classical and modern theories concerning complex organizations. Particular emphasis on processes and issues of dividing work, achieving coordination, and organizational change and adaptation. Prerequisite: 340 or consent of instructor.
- 440-4 The Management Process. Analysis of management theories and the administrative process. Specific managerial activities are analyzed and discussed. Functional relationships in administered organizations are explored. Restricted to MBA students.
- 451-4 Methods of Quantitative Analysis. Introduction to modern mathematical technologies applicable to solving business problems. Methods reviewed include symbolic logic, linear algebra and finite mathematics. Restricted to MBA students or consent of instructor.
- 452-4 Business Operations Analysis. Analysis of business operations and management problems emphasizing problem formulation, performance measures, decision criteria and various mathematical models and their application; linear programming, game theory, etc. Prerequisites: 340, 451 or consent of instructor.
- 455-4 Programming for Digital Computers. Computer organization and characteristics, machine language-coding, flow charts, sub-routines, optimum and symbolic coding, compilers and interpretative systems. Laboratory uses Computing Center equipment. Prerequisite: consent of instructor.

460-4 Work Measurement for Wage and Salary Control. Research design and methodology for wage and salary administration in an organization; fundamental considerations in evaluating jobs and positions; compensation methods and wage incentive systems. Prerequisite: 385.

461-4 Management Decision Making. Survey of problem solving theories and methods; decision information and systems models and applications. Analysis of administrative behavior in the decision process within formal organizations; socio-economic constraints and their interaction. Prerequisite: senior standing or consent of instructor.

472-4 Small Business. Small business analysis, primarily through case studies of business financing, location, organization, merchandising practices, records, government regulation, and taxes. Open only to students with concentration in business.

474-4 Management Responsibility in Society. Relationship of profit and service objectives of management and their limitations on management authority. Resolution of business-society conflicts with external environmental groups through socially responsible management. Prerequisite: 340.

479-4 Problems in Business and Economics. Applications of economic theory and tools of analysis to practical business problems. Cost and demand functions are analyzed from a policy standpoint. Prerequisite: senior standing.

480-4 Recent Problems in Labor Law. Social, economic, and legal evaluations of recent labor problems, court decisions, and legislation. Concern is on long-run legislative impact on manpower planning, dispute settlement, and utilization of employment resources. Prerequisite: Finance 371 or Economics 310 or Government 395.

481-4 Administrative Management. Integration and analytical application of business core courses to comprehensive business cases. Emphasis on policy issues in the identification and resolution of business problems. Prerequisite: 340, Finance 320, and Marketing 325.

483-4 Advanced Production Management. Internal problems of managerial control of production including recent developments in theory and techniques: case material will be utilized for the development of analytical ability. Prerequisite: 380.

485-4 Problems in Personnel Management. Analysis of problems in personnel administration arising from current developments in organization; case problems and special reports; and personnel practices. Prerequisite: 385.

Marketing

225-3 Marketing and the Economy. A micro approach to the subject. Attention is given to the structural organization of marketing institutions and to factors influencing the marketing environment. Consumption costs, efficiency, and social productivity are also covered. Prerequisite: GSB 201b or 211a or equivalent.

325-4 Marketing and the Firm. A micro approach to the subject. Attention is given to the management of the marketing efforts of the individual firm. Emphasis is given to the application of basic management concepts within research, product planning, sales, advertising, traffic and inventory management, and distribution. Prerequisite: 225 and Accounting 251a or equivalent.

326-4 Quantitative Techniques in Marketing. An introduction to and survey of, mathematical tools of decision making in marketing situations. Application of these techniques to the analyses of marketing problems is emphasized. Prerequisite: 325, GSD 108b (or 114b).

329-4 Retail Management. This is a course designed to present the basic principles and decision areas such as location, layout, organization, personnel, merchandise control, sales promotion, advertising, etc., of retail and wholesale merchandising through an inter-related and managerial perspective. Prerequisite: 325.

333-4 Principles of Advertising. Advertising fundamentals in relation to modern business activities; fields of advertising; advertising media, campaigns, and systems. Prerequisite: 325.

335-4 International Marketing. Factors affecting export and import marketing. Emphasis on international and governmental roles. Prerequisite: 325.

336-4 Purchasing. Dealer-supplier relationship, in manufacturing, wholesaling, retailing. Purchasing for resale and for consumption. Influence in sales

promotion materials. Buying from single and multiple suppliers. Prerequisite: 325.

337-4 Principles of Salesmanship. History, scope, and importance of selling in modern business; the sales department; the salesman's part in the selling process. Prerequisite: 325.

341-4 Transportation. Evolution of American Transportation systems, and of the current problems of transportation facilities in connection with governmental control and regulation. Prerequisite: 325.

401-4 Problems of Retailing. This course is an analysis of current problems and trends in distribution systems and in the marketing of consumer goods. Emphasis is placed upon economic and legal aspects of the retail competitive environment, channels of distribution, retail store operation, and nonstore retailing. Prerequisites: 325 and 329.

438-4 Sales Management. Developing and training a sales force. The different types of sales forces. Managing sales functions; determining salesmen's territories, quotas, compensation. Budget preparation. Developing and implementing the merchandise plan. Prerequisites: 325 and 337.

439-4 Industrial Marketing Management. Designed to give an over-all view of the field of industrial marketing. Additional emphasis is to be placed on decision criteria. Prerequisites: 325 and 336.

450-4 Introduction to Managerial Marketing. Designed to give an over-all view of the field of marketing and the field of marketing policy decisions. Cases are used to illustrate theory covered. Prerequisite: Restricted to MBA students.

452-4 Physical Distribution Management. This course is designed to present a systematic, integrated treatment of problems of managing goods from their sources to the ultimate consumer. Attention will focus on spatial relationships of plant capacity and storage facilities and their connecting link, transportation. Prerequisites: 325 and 341.

463-4 Advertising Management. The effective use of advertising by business management. An understanding of what advertising can be expected to accomplish under different sets of marketing factors and products. The selection of advantageous advertising programs under different marketing mixes. Prerequisites: 325 and 333.

490-4 Marketing Research and Analysis. A nonmathematical development of the basic procedures, methods, and theory underlying analysis of primary and secondary market data. Prerequisites: 325 and one quarter of basic statistic or its equivalent.

Mathematics

111-10 (5,5) College Algebra and Trigonometry. For students who have had intermediate algebra and plane geometry in high school. Must be taken in a,b sequence.

150-10 (5,5) Elementary Calculus and Analytic Geometry. Elementary differential and integral calculus with analytic geometry and applications. Includes the definite integral and differentiation of transcendental functions. Must be taken in a,b sequence. Prerequisite: 111b.

220-4 Elementary Statistics.

225-4 Programming for Digital Computers. An intensive course. Topics include computer organization and characteristics, machine language coding, flow charts, subroutines, symbolic coding, and compiler systems. Equipment of the University's Data Processing and Computing Center is used for applications. Prerequisite: GSD 108c, or 111b, or consent of instructor.

252-9 (5,4) Intermediate Calculus and Analytic Geometry. Continuation of 150. Includes differential and integrated calculus, applications, introduction to solid analytic geometry, infinite series. Must be taken in a,b sequence. Prerequisite: 150b.

305-6 (3,3) Applied Mathematics for the Physical Sciences. (a) Ordinary differential equations, linear algebra, and applications; (b) Additional topics in applied mathematics such as finite difference methods, Laplace transforms, and Fourier series. Must be taken in a,b sequence. Prerequisite: 252b.

310-4 The Teaching of Elementary Mathematics. A professional treatment of the subject matter of arithmetic methods and a study of trends and current literature on the teaching of arithmetic. For elementary education concentra-

tion only. Prerequisite: GSD 108b.

311-3 The Teaching of Secondary Mathematics. A study of the nature and objectives of the secondary mathematics curriculum. Particular attention is given to the means of introducing new ideas into the high school program. For students preparing to be certified teachers of secondary mathematics. Does not count toward a mathematics concentration for Bachelor of Arts degree students. Prerequisite: 320a.

320-6 (3,3) Fundamental Concepts of Algebra. Introduces abstract algebraic structures, including groups, rings, and fields. Attention is given to classical theory of numbers and polynomials. Must be taken in a,b sequence. Prerequisite: 150b.

335-6 (3,3) Concepts of Geometry. An elementary introduction to various geometric systems to acquaint the student with the interrelationship between geometries of current interest. Topics include axiom systems, absolute plane geometry, Euclidean geometry, and non-Euclidean geometry. Must be taken in a,b sequence. Prerequisite 252a or consent of instructor.

395-2 to 12 Readings in Mathematics. Supervised reading in selected subjects. Prerequisite: 12 hours of 300- or 400-level mathematics, 4.00 grade point average in mathematics, and consent of chairman of department.

400-3 History of Mathematics. An introduction to the development of major mathematical concepts. Particular attention given to the evolution of the abstract concept of space, to the evolution of abstract algebra, to the evolution of the function concept, and to the changes in the concept of rigor in the development of mathematics from 600 B.C. to the present time. Prerequisite: 320a or consent of instructor.

407-3 Introduction to Partial Differential Equations. A continuation of 305. Topics in applied mathematics including linear partial differential equations, Bessel functions, and vector analysis. Prerequisite: 305b.

410-16 (4,4,4,4) Statistical Analysis. For students in fields using statistical methods but who are not required to take calculus. Includes (a) elements of probability, estimation, and testing hypotheses; (b) the general linear model (multiple linear regression, analysis of variance, analysis of covariance) and nonparametric statistics; (c) design of experiments; (d) sample survey techniques. May not be used to satisfy requirements for a mathematics concentration. Three lectures and two laboratory hours per week. Must be taken in either a,b,c,d or a,b,d,c sequence. Prerequisites: GSD 108c.

413-4 Solid Analytic Geometry. An algebraic study of equations of the first and second degree in three variables, with applications to geometry. Systems of planes; equations of lines in symmetric and parametric form. Spheres, cylinders, surfaces of revolution. Matrix algebra; real orthogonal and symmetric matrices. Coordinate transformations; orthogonal similarity. Quadratic forms and quadric surfaces; invariants; principal axes and planes. Prerequisite: 252b or consent of chairman.

421-6 (3,3) Linear Algebra. The theory of determinants and systems of linear equations; vector spaces, linear independence, bases, dimension; linear transformations, change of base, similarity; quadratic and Hermitian forms, orthogonal and unitary transformations; triangular and diagonal form; eigenvalues and eigenvectors; normal matrices; nilpotent and idempotent matrices, the spectral theorem. Must be taken in a,b sequence. Prerequisite: 252b.

425-3 Theory of Numbers. Topics in elementary number theory, including properties of integers and prime numbers, divisibility. Diophantine equations, and congruence of numbers. Prerequisite: 320a.

426-6 (3,3) Mathematical Logic. (Same as Philosophy 426.) (a) Matrix and set theoretic development of the propositional calculus, many-valued logics, modal logics. Completion and consistency proofs for the propositional calculus; (b) A formal development of the predicate calculus and related problems. Must be taken in a,b sequence. Prerequisite: 320a or consent of instructor.

428-6 (3,3) Boolean Algebra and Switching Theory. An introduction to Boolean algebra with applications to switching circuits, set theory, and logic; Boolean functions and canonical forms; Boolean rings and algebras; linear graphs; partially ordered sets and lattices; theory of simplification and design of combinational and sequential circuits. Must be taken in a,b sequence. Prerequisite: 320a or consent of instructor.

430-4 Projective Geometry. Introduction to the fundamental concepts of projective geometry. Topics usually include the study of conics, polar systems of conics, homogeneous coordinates, cross-ratio, harmonic sets, duality, projec-

tivities, and involutions. Prerequisite: 252a or consent of instructor.

433-3 Theory of Point Sets. General properties of sets; topology of plane sets; closed sets and open sets in metric spaces, homeomorphisms and continuous mappings, connectedness. Prerequisite: 252b and 6 hours in courses numbered 300 or higher, or consent of instructor.

440-2 to 4¹ Modern Algebra for Teachers. An introduction to algebra as a logical system, including groups, rings, and fields. Prerequisite: consent of instructor.

442-2 to 4¹ Survey of Geometry. A survey of geometry, including projective geometry, topology, etc. Prerequisite: consent of instructor.

444-2 to 4¹ Sets, Functions, and Relations. Basic ideas of sets, set algebra, elementary logic, relations and functions, graphing. Prerequisite: consent of instructor.

445-2 to 4 Fundamental Concepts of Calculus. A careful study of the basic concepts of calculus. Prerequisite: consent of instructor.

452-9 (3,3,3) Advanced Calculus. Fundamental concepts of analysis: limits, continuity, differentiation, and integration. Major topics include partial differentiation, vector analysis, Riemann-Stieltjes integrals, multiple integrals, infinite series, improper integrals, uniform convergence, Fourier series, and line and surface integrals. Must be taken in a,b,c sequence. Prerequisite: 252b.

455-3 Analytic Functions with Applications. A course in the elements of the theory of functions of a complex variable with stress on techniques and applications. Topics include a discussion of analytic functions, contour integration, and conformal mapping. Prerequisite: 252b.

458-6 (3,3) Finite Mathematics. An introduction to topics in finite mathematics such as logic, sets, probability, linear algebra, and Markov chains. This course is designed for students preparing for high school teaching and for advanced students in the behavioral sciences. Prerequisite: 252a or consent of instructor.

460-4 Modern Geometry. Advanced topics in Euclidean geometry by the synthetic method. Topics include the nine-point circle, Simson line, theorems of Ceva and Menelaus, coaxial circles, harmonic section, poles and polars, similitude, and inversion. Prerequisite: 20 hours of college mathematics.

475-9 (3,3,3) Numerical Analysis. Introduction to approximation methods including finite differences and interpolation; numerical differentiation and quadrature; least squares approximation; numerical solution of linear and non-linear systems; numerical integration of systems of ordinary and partial differential equations. Emphasis upon error analysis throughout. Must be taken in a,b,c sequence. Prerequisite: 305a or 252b and consent of instructor.

480-10 (4,3,3) Probability. Introduction to probability theory. Includes the algebra of possibilities; discrete and continuous distributions, limit theorems, generating functions, and some elements of stochastic processes. Must be taken in a,b,c sequence. Prerequisite: 252b.

483-12 (4,4,4) Introduction to Mathematical Statistics. A mathematical development of the elements of statistical theory. (a) Probability distributions, generating functions, and limit theorems; (b) Statistical inference: estimation, tests of hypotheses, general linear hypothesis; (c) Design of experiments—a mathematical model approach. Must be taken in a,b,c sequence with the exception that 480a, 421a, and consent of instructor may replace 483a. A student will not be allowed university credit for both 480a and 483a. Prerequisite: 252b.

501-9 (3,3,3) Real Variables.

505-9 (3,3,3) Theory of Ordinary Differential Equations.

507-9 (3,3,3) Partial Differential Equations.

510-4 Foundations of Mathematics.

520-9 (3,3,3) Modern Algebra.

522-3 to 18 Advanced Topics in Algebra.

528-9 (3,3,3) Theory of Automata.

530-6 (3,3) Point Set Topology.

531-6 (3,3) Algebraic Topology.

532-3 to 18 Advanced Topics in Topology.

536-3 Differential Geometry.

540-4¹ Groups and Linear Transformations.

543-4 Probability for Teachers.

545-4¹ Intermediate Analysis for High School Teachers.

546-4¹ Convex Figures.

- 547-2 to 4¹ The Secondary School Mathematics Program.
550-1 to 10 Seminar.
551-9 (3,3,3) Functional Analysis.
552-3 to 18 Advanced Topics in Analysis.
555-9 (3,3,3) Complex Variables.
560-6 (3,3) Calculus of Variations.
580-9 (3,3,3) Mathematical Methods of Statistics.
592-3¹ Research in Mathematics Education.
595-1 to 10 Special Project.
599-1 to 9 Thesis.
600-1 to 48 Dissertation.

¹These courses are open to candidates for the Master of Science in Education degree in mathematics, to National Science Foundation Institute participants, and to those who have received the consent of the chairman of mathematics or the director of the institute.

Microbiology

- 301-5 Principles of Microbiology. A survey of morphology, structure, metabolism, population dynamics, and heredity of the microbial agents, with particular emphasis on pure culture methods of study of the bacteria, viruses, and related organisms. Four hours lecture, 5 hours laboratory. Prerequisite: one year of college chemistry and GSA 210a or equivalent.
- 302-5 General Microbiology. Interrelationships of microorganisms and their positions and influence in the biological world; relationships to soil fertility, host-parasite relationships, mechanisms of infection and resistance, principles of chemotherapy, and their exploitation by man in medicine and industry. Three hours lecture and 5 hours laboratory. Prerequisite: 301.
- 350-1 to 3 Readings in Microbiology.
- 390-2 to 5 Undergraduate Research Participation. Investigation of a problem either individually or as a part of a research group under direction of a member of the Faculty. Prerequisites: 4.00 grade point average in microbiology and/or consent of the department.
- 401-1 Seminar. (For undergraduates only.) Prerequisite: senior standing and consent of instructor. This course may be taken for credit once only.
- 403-5 Medical Bacteriology. A general survey of the mechanisms of infection, epidemiology, and immunity and the specific application of these principles to the symptomatology, diagnosis, treatment, and control of the more common bacterial infections of man. Three hours lecture and 4 hours laboratory. Prerequisite: 301 and 302.
- 422-5 Microbiology of Foods. The relationships of microorganisms to the preparation and preservation of foods with consideration of the laws governing sanitation, chemical preservatives, and fair dealing of the food producer. Three hours lecture, 4 hours laboratory. Prerequisite: 301.
- 423-5 Industrial Fermentation. The application of the chemical activities of microorganisms to the industrial production of beverages, foods, antibiotics, and various commercial chemicals. Three hours lecture, 4 hours laboratory. Prerequisites: 301 and organic chemistry.
- 424-5 (3,2) Soil Microbiology.
- 425-3 Biochemistry and Physiology of Microorganisms. The chemical basis of physiological functions in microbial cells with emphasis on the pathways of metabolism common to all living things. Three hours lecture. Prerequisites: 301 and organic chemistry.
- 426-2 Biochemistry and Physiology of Microorganisms. Four hours laboratory. Prerequisite: 425.
- 441-6 Virology. Properties, cultivation and titration of viruses and rickettsiae; cellular infection, multiplication and liberation of virus; immunological reactions and serological identification; hemagglutination and interference phenomena. Consideration of selected viral and rickettsiae diseases of animals. Three hours lecture, 6 hours laboratory. Prerequisite: 451 and consent of instructor.
- 451-6 Immunology. Natural and acquired immunity; antigens, antibodies and antigen-antibody reactions; hypersensitivity; practical use of immunity and hypersensitivity. Three hours lecture, 6 hours laboratory. Prerequisite: 403 and consent of instructor.
- 500-1 Seminar.

- 501-2 Genetics of Microorganisms.
- 503-2 Cytology of Microorganisms.
- 504-5 Methods of Microbiological Research.
- 506-2 Bibliographical Methods in Microbiology.
- 511-1 to 15 Research.
- 525-3 Biochemistry and Physiology of Microorganisms.
- 526-2 Biochemistry and Physiology of Microorganisms.
- 528-1 to 10 Readings in Microbiology.
- 599-3 to 9 Thesis.
- 600-3 to 48 Dissertation.

Music

001-5 (1,1,1,1,1) **Band.** (a) Saluki Marching Band, (b) Symphonic Band, (c) Stage Band, (d) Laboratory Band, and (e) Wind Ensemble. Prerequisite: c,e by audition; a,b,d by consent of instructor.

001f-1 **Piano Accompaniment Lab.** A performance lab for students whose principal instrument is piano and who have attained sufficient skill to accompany the music soloist or performing group.

002-4 (1,1,1,1) (a) University Choir, (b) Chorus Oratorio, (c) Male Glee Club, and (d) Women's Choral Ensemble. May be taken in any sequence. Any part may be repeated for 12 quarters. Prerequisites: Auditions required for a,c,d.

010-6 (1,1,1,1,1,1) **Class Applied Music.** Offered in all areas of applied music except organ. These courses include the minimum instruction required for passing the proficiency examinations in piano and voice and they offer practical training in the basic principles of playing the instruments of the orchestra and band. They also include introductory techniques and methods for teaching instrumental and choral groups in the elementary and secondary schools.

- a. Strings
- b. Woodwinds
- c. Brass

- d. Percussion
- e. Piano
- f. Voice

May be taken in any sequence.

105-12 (4,4,4) **Theory of Music.** Fundamentals of music in sight singing, ear training, harmony, and keyboard harmony.

140, 240, 340, 440, 540-1 to 4 **Private Applied Music.** Offered at five levels in the areas listed below. Credit is given at 1, 2, or 4 hours on each level. Consult with adviser for details of credit and requirements. May be repeated for three quarters at each level. Students with a concentration in Performance usually take 4 hours. Concentrations in music education and all secondary concentrations usually take 2 hours. Prerequisite for 140; music concentration or secondary concentration or consent of music faculty. Prerequisite for higher levels: three quarters at the previous level on the same instrument or consent of instructor.

- a. Violin
- b. Viola
- c. Cello
- d. String Bass
- e. Flute
- f. Oboe
- g. Clarinet
- h. Bassoon
- i. Saxophone

- j. Percussion
- k. Piano
- l. French Horn
- m. Trumpet
- n. Trombone
- o. Tuba
- p. Baritone
- q. Voice
- r. Organ

200-3 **Fundamentals of Music.** Rudiments of music for those with little or no musical background. Recommended as a course preliminary to 300 (not for music concentrations). May be taken concurrently with 010e.

205-9 (3,3,3) **Theory of Music.** Advanced harmonic techniques, modulation, altered chords, chromatic harmony, counterpoint, and introduction to contemporary harmonic principles. Must be taken in a,b,c sequence. Prerequisite: 105c.

240-1 to 4 **Private Applied Music.** (See Music 140).

300-6 (3,3) **Music Education-Elementary.** Teaching music in the elementary grades. (a) For music concentrations only; (b) For nonmusic concentrations only. Prerequisite: 200 or equivalent.

303-3 **Music Education-Secondary.** Teaching music in the high school.

305I-3 Instrumental Problems and Materials. Administration of the school instrumental music program. Emphasis on library, physical facilities, organization of the marching band, arranging music for out-of-door performances.

305V-3 Vocal Problems, Materials, and Conducting. Vocal and psychological problems in handling choral groups, reading and acquaintance with a variety of choral materials at the high school level, and interpretation through conducting techniques.

306-3 Music for Primary Children. Music activities, materials and methods appropriate for children in the primary grades. This course is offered especially for students with concentrations in Kindergarten-Primary and Elementary Education.

307-4 Recreational Music. For those interested in the less formal approach to music and for prospective leaders of recreational activities.

309-6 (2,2,2) Arranging. (a) Rudiments of arranging, choral and instrumental; (b) Techniques of arranging for the small ensemble; (c) Techniques of arranging for the large ensemble. Must be taken in a,b,c sequence. Prerequisite: 105c.

312-6 (2,2,2) Composition (a,b,c). Original composition in the smaller forms for piano, voice, string quartet, and other small combinations. Prerequisite: 205c.

315-2 Opera Repertory.

318-6 (2,2,2) Conducting. (a) Basic conducting techniques; (b) Choral or instrumental conducting techniques. Prerequisite: 318a.

326-6 (2,2,2) Analysis. The element of structure, form, and design in musical composition. Prerequisite: 205c.

340-1 to 4 Private Applied Music. (See Music 140.)

342-6 (2,2,2) Advanced Composition. Required of undergraduates with concentration in theory-composition, culminating with original works in contemporary idioms. Taught by individual instruction. Prerequisite: 312c and consent of department.

345-1 Chamber Choir.

346-2 to 12 Opera Workshop.

355-1 Chamber Music. String ensemble. May be repeated for credit.

GSC 357-9 (3,3,3) Music History and Literature.

365-1 Chamber Music. Woodwind, brass and percussion ensemble.

411-9 (3,3,3) (a) Symphonic Literature. Development of the symphony and the symphonic poem to 1900; (b) **Choral Literature.** The literature of the larger vocal forms such as the cantata and oratorio to 1900; (c) **Chamber Music Literature.** Chamber music literature from the Renaissance to the present.

414-2 to 6 Collegium Musicum. Practicum in the preparation and performance of music from early times to the classical period. Prerequisite: Music Concentration and/or consent of the department.

420-1 Music Education Practicum. A shop-laboratory course dealing with the selection, adjustments, maintenance and repair of musical instruments.

441-6 (2,2,2) Counterpoint. (a) 16th Century Counterpoint. Special counterpoint and creative writing in the style of Palestrina and his contemporaries. Prerequisite: 105c; (b) 18th Century Counterpoint. Analysis and creative writing in the contrapuntal-harmonic technique of Bach and his contemporaries. Prerequisite: 105c; (c) Canon and Fugue. Analysis and creative writing of the larger imitative forms. Prerequisite: 441b.

451-2 to 3 Teaching General Classroom Music.

455-2 to 6 Elementary Music Education Workshop.

461-2 Teaching Techniques and Materials for the Beginning and Intermediate Levels. Designed to meet the needs of applied students in the Bachelor of Music or Master of Music degree programs in which the problems of private studio teaching and college-level teaching are discussed.

462-2 Teaching Techniques and Materials for the Advanced Student. Prerequisite: 461.

465-9 (3,3,3) Development and Teaching of Strings. Place and function of string education in the elementary and secondary schools. Techniques of heterogeneous and homogeneous string teaching. Developing and sustaining interest in the string program. Resource aids. May be repeated for a total of 9 hours credit. Prerequisite: senior standing.

481-2 to 6 Readings in Music Theory.

482-2 to 6 Readings in Music History and Literature.

- 483-2 to 6 Readings in Music Education.
- 501-3 Introduction to Graduate Study in Music.
- 502-6 (2,2,2) Analytic Techniques.
- 503-3 to 4 Objective Research Techniques in Music Education.
- 504-3 Music of the Middle Ages and Renaissance.
- 505-3 Music of the Baroque Period.
- 506-3 Music of the Classical Period.
- 507-3 Music of the Romantic and Impressionistic Periods.
- 508-3 Music of the Twentieth Century.
- 509-3 The History and Philosophy of Music Education.
- 512-3 History of Opera.
- 515-3 20th Century Literature.
- 522-3 Seminar: Music History and Literature.
- 531-3 to 9 Advanced Composition.
- 535-3 Contemporary Idioms.
- 540-1 to 4 Private Applied Music. (See Music 140.)
- 545-3 to 9 Philosophy of Music Theory.
- 550-2 to 4 Administration and Supervision of Music (Elementary).
- 551-2 to 4 Organization and Administration of Music-Secondary.
- 553-3 Seminar in Choral Materials and Techniques.
- 554-3 Seminar in Instrumental Materials and Techniques.
- 556-2 to 6 Advanced Conducting.
- 560-2 to 3 Seminar in Music Education.
- 566-1 to 4 Instrumental Ensemble.
- 567-1 to 4 Vocal Ensemble.
- 568-2 to 12 Opera Workshop.
- 599-3 to 9 Thesis.

Philosophy

- 200-4 Types of Philosophy: An Introduction. Survey of the traditional branches and problems of philosophy, such as religion, metaphysics, epistemology, ethics, political theory, aesthetics, and history.
- 300-4 Elementary Metaphysics. Presentation of answers to the most general problems of existence. An attempt to unify all scientific approaches to reality through the laying down of common principles.
- 301-4 Philosophy of Religion. An analysis of problems in the psychology, metaphysics, and social effects of religion. Among topics discussed are the nature of mystical experience, the existence of God, and problems of suffering, prayer, and immortality.
- GSC 310-3 Religious Foundations of Western Civilization.
- GSC 311-3 Philosophies and Religions of India.
- GSC 312-3 Philosophies and Religions of the Far East.
- 320-4 General Logic. Terms, propositions, and reasoning. Logic as an instrument for the solution of problems in natural and social sciences.
- 340-4 Elementary Ethics and Politics. Problems of right and wrong for the individual and society.
- 355-4 Philosophy of Education. Survey of theories of education and their relationships to educational policies and practices, as elucidated by the great teachers. Satisfies the education requirement, Educational Administration 355.
- 360-4 Philosophy of Art. The significance of art as a human activity, its nature and standards as seen in the problems of criticism, and the relation of art to other forms of knowledge.
- GSC or GSA 363-6 (3,3) Philosophy of Science.
- GSC 381-3 Greek Philosophy.
- GSC 382-3 Graeco-Roman and Medieval Philosophies.
- GSC 383-3 Early Modern Philosophy.
- GSC 386-3 Early American Philosophy.
- GSC 387-3 Recent American Philosophy.
- 406-4 Philosophy of Biology. Leading concepts of biological sciences: species, evolution, life, organism and part, etc. Abstract ideas of biology are related, wherever possible, to specific experiments recorded in scientific literature. Prerequisites: 300 or 320, and three laboratory or field courses in the biological sciences or consent of instructor.
- 415-3 Logic of the Social Sciences. Logical and epistemological examination

of the social studies as types of knowledge. Basic problems in philosophy of science with major emphasis upon social science: relationship of theory to fact, nature of induction, nature of causal law, testability, influence of value judgments, etc. Intended for students with considerable maturity in a social science or in philosophy.

420-4 Advanced Logic. A careful study of symbolic and discursive systems of logic: Aristotle, Spinoza, Boole, Whitehead, and Johnson. Prerequisites: 320 and consent of instructor.

426-6 (3,3) Mathematical Logic. (See Mathematics 426.)

428-3 Logic of the Exact Sciences. Critical study of the technical and philosophical problems associated with formal logic and its uses as a tool for model construction, for formalizations, reconstructions, and as an image of rational thought. Prerequisites: 426-6 or consent of instructor.

441-4 Philosophy of Politics. (Same as Government 441.) Some of the central problems of modern political life, such as sovereignty, world government, authority and consent, the relations of economics and social studies to political theory. Prerequisite: GSC 102 or 340 or consent of instructor.

443-4 Philosophy of History. Classical and contemporary reflections on the nature of history and historical knowledge as the basis for dealing with the humanities. Prerequisite: consent of instructor.

460-4 Advanced Philosophy of Art. The definition of art, its relations to science, culture, and morals; the various types of art defined. Familiarity with at least one of the fine arts is assumed. Prerequisites: GSC 207 or 360, and six courses in music, painting, sculpture, literature, or drama.

477-4 Latin American Philosophy. A survey of philosophic thought in Latin America from colonial times through nineteenth century positivism and the reactions against it, up to recent trends. Reading of original texts in English translations. Discussions and reports.

478-4 Seminar in Latin American Thought. (See Spanish 478.)

481-6 (3,3) 19th Century European Philosophy. (a) Kant, Schopenhauer, and Hegel; (b) Nietzsche, Bergson, the Utilitarians, and latter day idealists. May be taken singly and in any sequence.

482-3 Recent European Philosophy. Phenomenology, Positivism, Linguistic Analysis, and Existentialism.

490-2 to 12 Special Problems. Hours and credits to be arranged. Courses for qualified seniors and graduates who need to pursue certain topics further than regularly titled courses permit. Special topics announced from time to time. Students are invited to suggest topics for individual study and papers or for group study. Consent of instructor in all cases required.

500-2 to 4 Seminar in Metaphysics.

501-2 to 4 Seminar in the Philosophy of Religion.

515-3 Theory of Nature.

530-2 to 4 Seminar in Theory of Knowledge.

540-3 Philosophy of Journalism.

570-3 Seminar in American Idealism.

581-2 to 4 Seminar in Plato.

582-2 to 4 Seminar in Aristotle.

585-3 Seminar in British Empiricism.

586-2 to 4 Seminar in Spinoza.

587-3 Seminar in Hegel.

588-2 to 4 Seminar in Kant.

589-2 to 12, 590-2 to 12 General Graduate Seminar.

591-1 to 5 Readings in Philosophy.

599-2 to 9 Thesis.

600-3 to 48 Dissertation.

Physical Education—Men

100a-1 Methods of Teaching Swimming. Stresses techniques and methods of teaching applied to individual and group instruction. Basic strokes, underwater swimming, elementary diving, body and breath control, self support, and watermanship. Prerequisite for nonswimmers: audit beginner's swimming course.

100b-1 Methods of Teaching Golf. To prepare the student to teach the fundamental aspects of golf, with emphasis on adaptation to varied approaches in teaching.

100c-1 Methods of Teaching Tennis. Enables the student to acquire, through practice, the knowledge and skills necessary to teach this activity; includes consideration of desirable teaching materials to enhance instruction.

100d-1 Methods of Teaching Individual and Team Activities.

100e-1 Methods of Teaching Basic Rhythms.

100f-1 Methods of Teaching Exercise.

100g-2 Methods of Teaching Football. Individual instruction and practice in all the fundamentals of the game such as passing, kicking, blocking, tackling, running. Emphasis on effective methods of teaching and coaching.

100h-2 Methods of Teaching Basketball. Deals with individual and team fundamentals with special emphasis on passing, pivoting, shooting, dribbling, and variety of play patterns concerned with offense and defense. Basic methods of teaching and coaching.

100i-2 Methods of Teaching Baseball. Development of the practical skills and ability to teach and coach the techniques of batting, fielding, and playing the various positions in the game.

100j-2 Methods of Teaching Track and Field. Students gain practical experience as a foundation for learning the techniques of teaching the running and field events. Emphasis on individual analysis of movement for effective teaching.

100k-2 Methods of Teaching Gymnastics. To develop individual techniques in stunts and tumbling, calisthenics, parallel bars, side horses, trampoline, and high bar; fundamental skills, individual and group methods of instruction.

100m-2 Methods of Teaching Wrestling. Enables the student to master the fundamental skills of wrestling as well as to teach the individual and group methods of wrestling instruction.

101-2 Orientation Practicum in Physical Education. To introduce the student to his professional field, to enable him to secure a concept of the role of physical education in total education, and to crystallize his thinking in relation to vocational objectives. The significant historical aspects of physical education and its role in the broad cultural heritage in order to provide an interpretation and perspective to contemporary issues and developments. Freshman year.

170-2 Varsity Football.

171-2 Varsity Basketball.

172-2 Varsity Track.

173-2 Varsity Tennis.

174-2 Varsity Gymnastics.

175-2 Varsity Baseball.

176-2 Varsity Golf.

177-2 Varsity Swimming.

178-2 Varsity Cross Country.

179-2 Varsity Wrestling.

220-1 Recreational Activities and Games (Outdoor).

221-1 Recreational Activities and Games (Indoor).

303-5 Kinesiology. Study of joint and muscle action as a basis for the mechanical analysis of human physical movement executed in daily life and in physical education activities and sports. Prerequisites: Physiology 300. GSA 301.

305-2 Physical Education for the Atypical Student. Deals with the recognition of physical deviations from the normal student and with the provisions of special or modified physical education or recreational activities for such students. Prerequisites: Physiology 300 and GSA 301.

306-1 Advanced Stunts and Tumbling.

307-1 Advanced Apparatus.

317-1 Life Saving and Water Safety.

330a-2 Theory of Basketball Coaching. Different types of offense and defense studied; special emphasis given to early season conditioning and practice, offensive and defensive drills, team strategy, rules of the game. Prerequisite: 100h.

330b-2 Theory of Football Coaching. Deals with all phases of the game; offensive and defensive formation analyzed; strengths and weakness of each studied; various types of individual plays analyzed; rules discussed. Prerequisite: 100g.

331a-2 Theory of Swimming Coaching. Treatment of foundations and principles underlying coaching methods; comparative study differences in prevailing theories and methods; development of programs of training in pre-season, mid-season, and post-season of competition. Prerequisite: 100a.

331b-2 Theory of Baseball Coaching. A study of the strategy of the game; the

conduct of daily practice; analysis of the rules and their application to play situations. Also effective methods of coaching for best results. Prerequisite: 100i.

331c—2 Theory of Track and Field Coaching. Theoretical concepts dealing with the effective performance in running and field events; special emphasis on methods of training for such events; methods of organizing and conducting track and field meets. Prerequisite: 100j.

331d—2 Theory of Wrestling Coaching. Prepares students to develop program of wrestling; includes comparative knowledge of problems, techniques, materials, and systems in coaching wrestling as well as the organization and administration of the wrestling program. Prerequisite: 100m.

331e—2 Theory of Tennis Coaching. Theory of advanced strokes, strategy and tactics, scheduling and conducting matches, tournaments, exhibitions and clinics; officiating; organizing and promoting development programs. Prerequisite: 100c.

331f—2 Theory of Gymnastic Coaching. Deals with all phases of gymnastics; organization of dual meets, championships, and exhibitional teams; practice schedules; care and purchase of equipment; development and evaluation of exercises and routines; techniques of judging. Prerequisite: 100k.

335—2 Administration of Aquatics. The organization, administration, and supervision of aquatic programs in institutional and community swimming pools and camp waterfronts; the construction, operation, and maintenance of pools and waterfronts; personnel and program problems.

341—3 Principles of Physical Education. An understanding of the scientific foundations of physical education as implied by the accepted principles of psychology, physiology, sociology, biology, educational method of philosophy, anatomy, kinesiology, and related areas. Senior year.

345a—1 Officiating of Fall Sports. Interpretation of rules in football, cross country, and soccer; techniques of officiating; code of ethics, for officials and players; problems of officiating. Officiating practice required.

345b—1 Officiating of Winter Sports. Interpretation of rules in basketball, wrestling, and swimming; techniques of officiating; code of ethics for officials and players; problems of officiating. Officiating practice required.

345c—1 Officiating of Spring Sports. Interpretation of rules in baseball, track and field, tennis and golf; techniques of officiating; code of ethics for officials and players; problems of officiating. Officiating practice required.

350—Methods and Materials for Teaching Physical Education Activities in the Elementary School. The organization and conduct of the program with special emphasis on program planning, evaluation of materials, observation and practice in creative rhythms, singing games, folk dancing, and games of low organization. Two hours lecture; 2 hours laboratory.

354—3 Organization and Administration of Physical Education and Athletics. The organization and conduct of the total program of physical education including interscholastic athletics based upon accepted educational policies and practices. Emphasis on problems of administration.

355—2 Assisting Techniques.

370—3 to 4 Tests and Measurements in Physical Education. Measurements as an aid in determining student needs, curriculum construction, teaching effectiveness, and the attainment of educational objectives. Includes the selection, administration, and interpretation of tests. Three hours lecture; 2 hours laboratory.

376—3 Care and Prevention of Athletic Injuries. The theoretical and practical methods of preventing and treating athletic injuries; techniques of taping and bandaging; emergency first aid; massage; use of physical therapy modalities. Two hours lecture; 2 hours laboratory. Prerequisite: Physiology 300 and GSA 301.

377—1 Horseback Riding.

378—1 Canoeing and Boating.

400—4 Evaluation in Physical Education. Historical background of measurement in physical education; selection and evaluation of contemporary testing devices; structure and use of tests; administering the testing program; and interpretation and application of results. Fulfills the tests and measurements course requirements for the Master of Science degree.

402—3 Organization and Administration of Intramural and Extramural Activities. Planning intramural programs of sports; planning and coordinating extramural activities commonly associated with physical education.

403—4 The Adaptation of Physical and Recreational Activities to the Handi-

capped Individual. Recognition of postural deviations; devising and planning programs for the physically atypical.

404-4 The Teaching of Sports. Teaching methods, officiating, organization, safety precautions, and selecting equipment for sports.

405-4 Current Theories and Practices in the Teaching of Dance. History and evolution of dance; place of dance in education.

406-4 Basic Concepts of Physical Education. The place of physical education in the school program, and the concepts underlying the program. (Required of all students not presenting the undergraduate courses 354 or 340.)

407-4 Scientific Basis of Athletic Training.

408-2 to 4 Workshop: Physical Fitness—Its Role and Application in Education. Improvement of programs and teaching techniques involved in the development of various aspects of physical fitness. Units on postural status; body weight control; tension factors, causes, and control; exercise tolerance; and general body mechanics and control.

420-4 Physiological Effects of Motor Activity. The general physiological effects of motor activity upon the structure and function of body organs; specific effect of exercise on the muscular system. Prerequisite: Physiology 209 or equivalent.

475-2 to 4 Individual Research. (Selected areas with 2 to 4 hours in each.)

500-4 Techniques of Research.

501-4 Curriculum in Physical Education.

502-4 Foundations of Motor Skills.

503-4 Seminar in Physical Education.

504-4 Problems in Physical Education.

508-3 Administration of Interschol Athletics.

509-4 Supervision of Physical Education.

510-4 (2,2) Motor Development.

511-2 Analysis of Human Physical Movement.

525-1 to 6 Readings in Physical Education.

599-3 to 9 Thesis.

600-2 to 48 Dissertation.

Physical Education—Women

Basic Movement: 113.

Team Sports: 114, 224, 244.

Aquatics: 211, 271, 316, 317, 378.

Individual Sports: 216, 218, 228, 229, 328, 377.

Dance: 212, 222, 242, 272, 374, 376.

Officiating: 311.

Teaching Physical Education in Elementary School: 319, 350.

Teaching Physical Education in Secondary School: 301, 304, 360, 361, 362, 363.

Camping: 348.

Professional Courses: 303, 308, 351, 352, 353, 354, 355, 370.

113-1 Basic Movement.

114-1 Speedball. Techniques and team tactics.

211-1 Intermediate Swimming. Prerequisite: pass beginning swimming test.

212-1 Beginning Contemporary Dance. Fundamentals of movement and composition. A basic course culminating with experiences in contemporary dance composition.

216-1 Archery.

218-1 Intermediate Fencing. Prerequisite: GSE 114m.

222-1 Folk Dancing.

224-1 Basketball.

228-1 Tennis.

229-1 Intermediate Golf. Prerequisite: GSE 114e.

242-1 Square and Social Dance.

244-1 Hockey.

271-1 Sailing.

272-1 Tap Dance.

273-1 to 6 Dance Workshop.

301-2 Techniques of Teaching Recreational Sports. Analysis and methods of

teaching badminton, deck tennis, volleyball, table tennis, and other recreational sports.

303–5 Kinesiology. The mechanical analysis of physical education activities through the study of joint and muscle action. Prerequisite: Anatomy.

304–10 (2,2,2,2,2) Techniques of Teaching Sports. Methods of teaching, construction of daily lesson plans, and analysis of techniques. (a) soccer and volleyball; (b) hockey and speedball; (c) basketball; (d) tumbling, stunts, and gymnastics; (e) softball and tennis. Assistantship required during a,b,c,d, and e.

308–5 Methods of Teaching Dance. A course dealing with each of the various types of dance, including fundamental progressions, and composition in each type. Prerequisites: 212, 222 or equivalent.

311–2 (1,1) Theory of Officiating Basketball. Study of requirements of a nationally-rated official as set up by the Division for Girls' and Women's Sports.

312–4 History and Philosophy of Dance. The history and development of dance from primitive to contemporary forms.

313–4 Dance Production. Advanced dance techniques and choreography. Choreographic emphases including staging and production of dance. Prerequisite: GSE 113e or consent of instructor.

316–1 Advanced Swimming. Prerequisite: 211.

317–1 Life Saving and Water Safety. Techniques of Red Cross Life Saving and Water Safety. Prerequisite: pass intermediate swimming test.

319–4 Teaching Elementary School Group Activities. Study of age characteristics; planning of activity programs for all grade levels; techniques of teaching activities for elementary grades; fulfillment of the Illinois requirements for elementary school teachers. Prerequisite: Psychology 301 or Guidance 305.

328–1 Intermediate Tennis. Prerequisite: 228.

348–2 to 4 Camp and Community Leadership. Fundamentals of scouting, camping, and counseling. A weekend camping trip required.

350–5 Materials and Methods in Elementary Schools. For supervisors and teachers of physical education. Curriculum planning based on grade characteristics and educational philosophy, presentation of skills including skill tests, lead-up games, stunts and tumbling, games of low organization, creative rhythms, singing games, and folk dance.

351–4 Recreation and Physical Education for Atypical Handicapped Individuals. Techniques of physical examination; postural defects and their correction; activities suitable for the atypical; program building; and correlation of this program with the physical education curriculum.

352–2 History of Physical Education. A study of the background and development of physical education.

353–4 Organization and Administration of Physical Education. Criteria for the selection of activities; the organization of classes, the policies and the personnel; the physical plant and its upkeep; the planning, utilization, and care of equipment in the physical education program. Prerequisite: 354.

354–2 Principles of Physical Education. The scientific foundations applied to physical education.

355–3 Techniques of Teaching Swimming. Methods of teaching, analysis of strokes, and devices for teaching swimming and life saving. Prerequisite: 211 or equivalent.

360–4 The Physical Education Program for Girls in Junior and Senior High Schools (workshop). Program planning, source materials, and selected physical activities.

361–1 to 4 The Teaching of Team Sports and Dance to Junior and Senior High School Girls (workshop). Techniques of teaching volleyball, basketball, soccer, and dance.

362–1 to 4 Teaching Basic Activities to Junior and Senior High School Girls. Teaching badminton, softball, basic movement, and recreational games.

363–1 to 4 Teaching a Sports Program for High School Girls (workshop). Designed for teachers in service who have provisional certificates.

369–4 Improving Teaching Through Testing (workshop). Teaching aids, diagnostic measures, practice and standardized tests for a variety of physical skills. Principles of programmed learning applied to psychomotor tasks.

370–3 to 4 Tests and Measurements in Physical Education. The theory of measurement in health and physical education, the selection and administration of appropriate tests, and the interpretation of results. Projects required.

- 374-1 **Advanced Folk Dance.**
- 376-1 **Pre-Classic Dance Forms.** Prerequisite: 212 or consent of instructor.
- 377-1 **Horseback Riding** (fee required).
- 378-1 **Canoeing and Boating.** Prerequisite: pass swimming test (fee required).
- 400-4 **Evaluation in Physical Education.** Historical background of measurement in physical education; selection and evaluation of contemporary testing devices; structure and use of tests; administering the testing program; and interpretation and application of results. Fulfills the tests and measurements course requirements for the Master of Science degree.
- 402-3 **Organization and Administration of Intramural and Extramural Activities.** Planning intramural programs of sports; planning and coordinating extramural activities commonly associated with physical education.
- 403-4 **The Adaptation of Physical and Recreational Activities to the Handicapped Individual.** Recognition of postural deviations; devising and planning programs for the physically atypical.
- 404-4 **The Teaching of Sports.** Teaching methods, officiating, class organization, analysis of skills, and application of the principles of motor learning.
- 405-4 **Current Theories and Practices in the Teaching of Dance.** History and evolution of dance; place of dance in education.
- 406-4 **Basic Concepts of Physical Education.** The place of physical education in the school program, and the concepts underlying the program. (Required of all students not presenting the undergraduate courses 354 or 340.)
- 407-4 **Scientific Basis of Athletic Training.** The theoretical and practical methods of preventing and treating athletic injuries.
- 408-2 to 4 **Physical Fitness—Its Role and Application in Education.** Improvement of programs and teaching techniques involved in the development of various aspects of physical fitness. Units on postural status; body weight control; tension factors, causes, and control; exercise tolerance; and general body mechanics and control.
- 420-4 **Physiological Effects of Motor Activity.** The general physiological effects of motor activity upon the structure and function of body organs; specific effect of exercise on the muscular system. Prerequisite: Physiology 209 or equivalent.
- 475-2 to 4 **Individual Research.** The selection, investigation, and writing of a research topic under supervision of an instructor. (a) dance; (b) kinesiology; (c) measurement; (d) motor development; (e) physiology of exercise, and (f) history and philosophy.
- 500-4 **Techniques of Research.**
- 501-4 **Curriculum in Physical Education.**
- 502-4 **Foundations of Motor Skills.**
- 503-4 **Seminar in Physical Education.**
- 504-4 **Problems in Physical Education.**
- 508-3 **Administration of Interschool Athletics.**
- 509-4 **Supervision of Physical Education.**
- 510-4 (2,2) **Motor Development.**
- 511-2 **Analysis of Human Physical Movement.**
- 525-1 to 6 **Readings in Physical Education.**
- 599-3 to 9 **Thesis.**
- 600-2 to 48 **Dissertation.**

Physics

- 111-9 (3,3,3) **College Physics.** Designed for all students of the sciences but restricted to freshmen who can satisfy the mathematics prerequisite at the beginning of the fall quarter. Prerequisite: Advanced standing in Mathematics 111a.
- 112-3 (1,1,1) **College Physics Laboratory.** Three hours of laboratory per week. Prerequisite: concurrent enrollment in 111.
- 206-9 (3,3,3) **College Physics.** Designed to meet preprofessional requirements and the needs of all students in the sciences, except physics and engineering. Must be taken in a,b,c or a,c,b sequence. Prerequisite: Mathematics 111b.
- 207-3 (1,1,1) **College Physics Laboratory.** One 3-hour laboratory period per week, taken concurrently with 206.
- 211-15 (5,5,5) **University Physics.** A basic course using calculus for science, mathematics and pre-engineering students. Laboratory. (a) Mechanics; (b)

Light, sound and heat; (c) Electricity and magnetism. Must be taken in a,b,c or a,c,b sequence. Prerequisite: Mathematics 150b (or equivalent) or concurrent enrollment.

300–5 University Physics IV. A continuation of 211 covering modern physics. Three lecture, two recitation and two laboratory hours per week. Prerequisite: 111, 206, or 211.

301–3 Mechanics. Intermediate theoretical particle mechanics using vector analysis. Prerequisites: 111a, 206a, or 211a; Mathematics 305a or concurrent enrollment; or consent of instructor.

304–3 Thermodynamics. A macroscopic study of the thermal properties of matter and the laws of thermodynamics. Prerequisites: 111b, 206b, or 211b and Mathematics 252b.

305–6 (3,3) Introduction to Electric Theory. Vector treatment of the theory, electrostatics in vacua and in matter, steady currents, electromagnetism and quasi-steady currents. Prerequisites: 111, 206, or 211; Mathematics 305a, or concurrent enrollment, or consent of instructor.

307–2 Electrical Measurements. A laboratory course illustrating basic electrical and magnetic properties and emphasizing precision in their measurement. Prerequisite: 305b or concurrent enrollment.

309–3 Electric Circuits. Electron tube and transistor circuit principles with applications to radio receivers, transmitters, and power supplies. Prerequisite: 111c, 206c, or 211c.

310–3 Light. Light propagation and optical instruments: reflection, refraction, interference, diffraction, and polarization of light. Prerequisite: 111b, 206b, or 211b.

311–1 Optics Laboratory. Advanced experiments in geometrical and physical optics. Three laboratory hours per week. Prerequisite: 310 or concurrent enrollment.

312–2 Electric Circuits Laboratory. Laboratory studies of properties of electron tubes and transistors and basic circuits employing them in power supplies, amplifiers, and oscillators. Prerequisite: 309.

401–3 Mechanics. Rigid body mechanics, normal coordinates, mechanics of continuous media, and advanced principles. Prerequisites: 301, Mathematics 455c.

404–6 (3,3) Physical Electronics. Kinetic theory and statistical mechanics with applications to electronic conduction in solids, vacuum, and gases, electron emission and ballistics; Bose-Einstein and Fermi statistics, electron theory of metals; semiconductors; quantum physical phenomena of the solid state. Prerequisite: 304, 305, 401 (or consent of instructor).

405–3 Electronics. Advanced theory and application of vacuum tubes and semiconductor devices as circuit elements in power supplies, oscillators, amplifiers, and shaping circuits. Prerequisites: 305 and 309 or consent of instructor.

410–6 (3,3) Introduction to Electromagnetic Wave Theory. A theoretical study of electromagnetic wave generation, propagation, and detection, with applications to microwaves and modern optics. Prerequisites: 305, 310.

415–12 (3,3,3,3) Modern Physics. Elements of wave mechanics, special relativity, atomic, molecular, and nuclear physics. Prerequisites: 301, 305, Mathematics 455c (or consent of instructor).

418–1 to 4 Modern Physics Laboratory.

420–2 to 5 Special Projects. Each student is assigned to a definite investigative topic. Adapted to advanced undergraduate students. Prerequisite: 301, 305.

504–12 (4,4,4) Lattice Dynamics. (Same as Applied Science 504.)

510–9 (3,3,3) Classical Mechanics.

511–9 (3,3,3) Mathematical Methods of Physics.

520–2 to 5 Special Projects.

530–9 (3,3,3) Electromagnetic Theory.

531–9 (3,3,3) Quantum Mechanics.

532–9 (3,3,3) Advanced Quantum Mechanics.

540–9 (3,3,3) Nuclear Physics.

550–9 (3,3,3) Atomic and Molecular Spectra.

555–6 (3,3) Materials Structure Analysis.

560–9 (3,3,3) Statistical Mechanics.

570–9 (3,3,3) Solid State Physics.

575–1 to 4 Graduate Seminar.

580–3 to 6 Selected Topics in Physics.

590–1 to 9 Thesis.

Physiology

200-3 Occupational Therapy Orientation. A survey and history of the field. The uses, techniques and philosophies of occupational therapy and its role in the treatment of disease and in rehabilitation. Three hours lecture per week.

215-3 Introduction to Pharmacology. Use and action of drugs on the human body. Primarily for nurses. Three hours lecture per week.

300-4 to 5 Human Anatomy. Lectures, demonstrations, and periodic observation of the prosected body. Lectures confined to bones, joints, muscles, and nerves. Primarily for students in physical education. Four hours lecture per week. One section, 300n, is reserved chiefly for nursing students. All bodily systems are reviewed. A 3-hour laboratory is substituted for one of the lectures.

GSA 301-4 Principles of Physiology.

GSA 302-3 Psychobiological Foundations of Behavior.

315-15 (5,5,5) Advanced College Physiology. Lectures emphasize mammalian and human physiology whereas the laboratory involves function throughout the vertebrate classes. (a) Blood, circulation, and respiration; (b) digestion, excretion, and endocrines; (c) muscles, nervous system, and sense organs. Three hours lecture and 4 hours laboratory per week. Prerequisite: GSA 201c and 5 hours of chemistry.

410-15 (5,5,5) Advanced Anatomy. Dissection of the human body. Primarily for students with a concentration in physiology and other biological sciences. Not a premedical course. Two hours lecture, 6 hours laboratory.

414-4 Anatomy and Physiology of Speech and Hearing Mechanisms. The anatomy and physiology of the vocal apparatus. Primarily for students with a concentration in speech pathology. Three hours lecture, 2 hours laboratory.

415-8 (4,4) Experimental Animal Surgery. Preparation of animals for surgery. Anesthesia, instruments, care of animal quarters, selected exercises. Two hours lecture, 4 hours laboratory. Part b may be elected independently of a.

417-6 (3,3) Principles of Pharmacology. Action of drugs and other chemical substances upon the living organism. Physiological and biochemical events resulting from the action of drugs. Pharmacodynamics, chemo-therapy, toxicology, and therapeutics. Prerequisites: basic courses in chemistry and biological sciences. Two hours lecture, 2 hours laboratory.

430-12 (4,4,4) Cellular Physiology. The nature and mechanism of the living cell. Chemical and physical aspects of vital activity. Required for graduate majors in physiology. Recommended for students interested in biochemistry and biophysics. Three hours lecture, 2 hours laboratory.

433-4 Comparative Physiology. Fundamental physiological processes and the manner in which they vary in various groups of animals. Recommended for a concentration in physiology and for students in other biological sciences. Three hours lecture, 2 hours laboratory.

440-3 Electron Microscopy. Lectures, demonstrations, and practical experience with the electron microscope. Fundamentals of specimen preparation. Open to students with advanced knowledge of any natural or physical sciences. Two hours lecture, 2 hours laboratory.

450-4 to 16 Special Problems in Physiology. Selected problems in various aspects of physiology. Eight hours laboratory. Open only by permission.

460-12 (4,4,4) Mammalian Physiology. Function and biochemical organization in mammals, especially man. Open to students with adequate courses in biological sciences and chemistry. (a) blood, circulation, respiration; (b) digestion, excretion, endocrines; (c) nervous system sense organs. Three hours lecture, 4 hours laboratory.

465-6 (3,3) Introduction to Biophysics. Application of the analytic methods of the physical sciences to physiology. Molecular aspects of control systems governing vital processes. Three hours lecture. Prerequisite: one year physics.

500-1 to 9 Advanced Seminar.

519-4 Experimental Pharmacology.

520-9 (3,3,3) Physiological Technics.

521-1 to 6 Readings in Current Physiological Literature.

540-8 (4,4) Advanced Comparative Physiology.

550-3 Radiation Biology.

565-3 Biophysics.

599-3 to 9 Thesis.

600-4 to 36 Doctoral Dissertation.

Plan "A"

151-12 (3,3,3,3) Honors Seminar.

251-12 (3,3,3,3) Honors Seminar.

351-9 (3,3,3) Honors Seminar.

391-9 (3,3,3) Honors Seminar.

Plant Industries

103-4 Introductory Study of Soils. An introduction to soils and fertilizers, to their role in crop production, and to their management and conservation. Prerequisite: high school chemistry or consent of instructor.

264-4 General Horticulture. General principles of plant propagation, vegetable growing, fruit growing, landscape gardening, and floriculture. Field trip. Seniors cannot enroll without consent of department.

301-4 Soil Science for Foresters. (Same as Forestry 301.) Basic concepts of soil formation, classification, characteristics, fertilization, and management as they apply to the growth of trees. Field trips. Prerequisite: one course in chemistry and a concentration in forestry.

302-3 to 4 Advanced Soil Science. Basic principles of soil physics, chemistry and fertility as they relate to plant production. Prerequisite: 103 or 301.

304-3 Landscape Gardening. Land selection, landscape design and development for home, farm, and public sites with regard to area adaptation. Field trips.

306-5 (3,2) Soil and Water Conservation. (Same as Agricultural Industries 306.) (a) The study of the theoretical factors affecting soil erosion and excessive water run-off, including practices of water management and soil conservation. Prerequisite: one course in soils; (b) Laboratory. Practical structure methods of controlling water run-off and soil erosion. Prerequisite: 306a or concurrent enrollment.

309-4 Field Crop Production. Principles of growth and production of common field crops: cereals, forages, and miscellaneous crops; growth characteristics; adaptation; improvement; culture; diseases and insects and their control; utilization. Field trip. Prerequisite: GSA 201b.

315-4 Plant Genetics. (See Botany 315.)

316-4 Small Fruits. Production of strawberries, brambles, grapes, and miscellaneous small fruits. Field trips. Prerequisite: GSA 201c or concurrent enrollment or consent of department.

317-4 Insect Pests and Their Control. (See Zoology 316.)

320-5 Elements of Plant Physiology. (See Botany 320.)

324-4 Orchardling. Commercial tree fruit growing, physiology, orchard practices, pest control, harvesting, and marketing. Field trips. Prerequisites: 264, GSA 201c or concurrent enrollment.

334-4 Preservation and Processing of Agricultural Products.

344-4 General Floriculture. Propagation, culture, and uses of flowering plants in the home and garden. Field trips. Prerequisite: GSA 201c.

381-1 to 2 Agricultural Seminar. (Same as Agricultural Industries 381, Animal Industries 381, and Forestry 381.) Discussion of problems in agriculture. Limited to senior students.

390-1 to 6 Special Studies in Plant Industries. Assignments involving research and individual problems. Prerequisite: consent of chairman.

401-4 Soil Physics. Physical properties of the soil; factors affecting them, their measurements, evaluation, and influence in determination of soil productivity. Prerequisite: 103 or 301.

402-4 Soil Morphology and Classification. Morphology and soil formation, description and identification of soil profiles, classification of soils, techniques of soil mapping, and interpretation of survey data. Field trips. Prerequisite: 103 or 301.

404-3 Turf Management. Principles and methods of establishing and maintaining turf for homes, recreational areas, and public grounds. Study of basic plant and soil materials, fertility, culture, water management, and pest control as related to turf-grasses in variable environments. Field trips. Prerequisite: GSA 201c or equivalent; course in soils recommended.

406-4 Radioisotopes, Principles and Practices. Basic characteristics of radioactive materials and detection systems. Application of radioisotope technology to biologically related sciences, such as agriculture; includes requisite health physics safety practices. Prerequisite: Biochemistry, or physiology, or consent of department.

407-5 (3,2) Fertilizers and Soil Fertility. (a) Lecture. The uses of fertilizer material; effects of various fertilizers on soils and crops; fertility maintenance and soil management. Prerequisite: one course in soils; (b) Laboratory. The laboratory study of the chemistry and fertility of soils. Parallels the theoretical presentation given in 407a. Prerequisite: 407a or concurrent enrollment.

408-4 World Crop Production. Ecological and physiological considerations used in the interpretation of crop research data, with emphasis on modern developments and trends in production and research of major agronomic crops. Prerequisite: 309.

415-3 Plant Breeding. The relationship between certain aspects of genetics, plant anatomy, developmental morphology, and cytology and their application to practical breeding of horticultural, agronomic and forest plants. Induction and utilization of mutations, including polyploidy, will be emphasized. Prerequisite: Course in Genetics, Botany or Plant Industries 315, Animal Industries 332, Zoology 401.

418-4 Weeds and Their Control. Losses due to weeds, weed identification and distribution, methods of weed dissemination and reproduction. Mechanical, biological, and chemical control of weeds. State and federal legislation pertaining to weed control herbicides. Herbicide commercialization. Field trips. Prerequisite: GSA 201c or concurrent enrollment.

419-4 Forage Crop Management. Forage crop production and utilization; forage crop characteristics, breeding, and ecology; grasslands as related to animal production, soil conservation, crop rotation, and land use. Prerequisite: GSA 201c.

424-5 (3,2) Soil Microbiology. (a) Lecture. A study of the numbers, characteristics, and biochemical activities of soil micro-organisms, with particular consideration of their role in the transformations of organic matter, nitrogen, and minerals as related to soil fertility and management. Prerequisite: one course in Microbiology or soils; (b) Laboratory. Experiments designed to determine numbers, and to study the characteristics and biochemical activities of the soil microflora as related to fertility. Prerequisites: 424a, or concurrent enrollment, Microbiology 301.

438-5 Vegetable Production. Studies of the effects of physiological and morphological factors affecting the culture, harvesting, and marketing of commercial vegetables. Prerequisites: 264, GSA 201b or equivalent.

440-3 Plant Propagation. Fundamental principles of asexual and sexual propagation of horticultural plants. Actual work with seeds, cuttings, grafts, and other methods of propagation. Prerequisites: 264, GSA 201b or consent of department.

455-5 Plant Pathology. (See Botany 456.)

456c,e-4 (2,2) Agricultural Marketing Problems and Practices. (See Agricultural Industries 456c,e.)

506-2 Laboratory Methods for Radioisotopes.

507-3 Advanced Soil Fertility.

520-1 to 6 Readings.

575-1 to 6 Research.

581-1 to 6 Seminar.

599-2 to 9 Thesis.

Printing and Photography

259-3 to 30 Printing Skills. A variable-credit course into which students from other institutions and the Southern Illinois University Vocational-Technical Institute may transfer credit for courses in printing.

260-12 (4,4,4) Fundamentals of Still Photography. Cameras, lighting, and black-and-white film and print processing techniques with emphasis on (a) their application to photography as a communications medium; (b) the view camera and negative and print controls. Studio and darkroom work; (c) Color Photography. A study of the principles of color as related to color photography. Work in making color transparencies, with interior and exterior light.

Color negative exposure and an introduction to direct color printing. Must be taken in a,b,c sequence.

302-3 Advanced General Typography. Advanced work in copy preparation, copy fitting and layout problems.

303-4 Portrait Photography. An introduction to posing, lighting, retouching and finishing of portraits. Studio experience. Prerequisite: consent of department.

308-7 (4,3) Photolithography. Theory and practice of layout, copy preparation, photography, stripping, plate making and presswork for offset lithography. Must be taken in a,b sequence. Prerequisite: 271a.

309-12 (4,4,4) Commercial and Illustrative Photography. Advanced work in product, architectural, and illustrative photography in black-and-white and color. Prerequisite: 260c.

312-3 Paper. Historical background, materials and methods used in today's modern mills; sources and method of distribution; classification of printing papers—grades, weights, sizes, and quantities; selection to meet end-use specifications; trade customs; testing and quality evaluation; calculating requirements and cost determination. Prerequisite: 271b.

314-3 Bindery. Practical use of bindery equipment. Survey of bindery and finishing operations as they pertain to sheet work, pamphlet binding, case-bound and edition book binding. Equipment common to all types of binding is studied as well as special purpose manual and automatic facilities.

341-10 (4,3,3) Cinematography. (a) The fundamentals of cinematography, basic to further work in any kind of cinema production. Includes study of lenses, cameras, films, lighting, exposure, continuity, animation, titles, and editing; (b) Sound motion picture production. Study of film types. Laboratory consists of production of short sound films with commentary, music, and effects; (c) Production of a lip-synchronous sound film. Must be taken in a,b,c sequence.

360-8 to 12 (3,3,2-6) Publications Photography. (a) Work in visual news reporting with emphasis on short picture series and picture stories with captions and text. Prerequisite: 260a; (b) Production of picture essays including subject research, layout, captions, and text. Includes study of historic and current picture essays. Prerequisite: 360a; (c) Picture assignments for campus and other publications. Prerequisite: 360a.

364-3 Picture Editing. Selection, cropping, and layout of pictures for publications.

365-3 Printing Operation Analysis. Classification of printed matter by format and design for end-use purposes; determination of materials used and operations performed; comparative evaluation with respect to other processes, methods and facilities. Prerequisite: 312.

366-3 Printing Cost Analysis. Study of pricing methods and practices showing the allocation of materials and labor costs; application of cost accounting methods in the determination of actual vs. budgeted hour cost rates; distribution of administrative and manufacturing expenses; record keeping and the application and use of data processing equipment. Prerequisite: 365 and Accounting 250.

379-9 (3,3,3) Printing Production. Study of all aspects of printing production and plant operation. Functions and responsibilities of general management. Marketing, advertising, and selling techniques. Financial management with its attendant records and controls. Manufacturing practices, including organization, facilities, plant layout, production and quality control, procurement, warehousing and inventory. Industrial relations, including a survey of the jurisdiction, aims, and policies of the printing and related graphic arts trade unions. Must be taken in a,b,c sequence. Prerequisite: 365. May be taken concurrently with 381a,b.

381-8 (4,4) Estimating. A comprehensive study of estimating methods with extensive practice in the preparation of letterpress and offset printing cost forecasts as the basis for selling and production control. Duties and responsibilities of the estimator. Sources of production data, industry standards and performance records. Use of time and motion studies. Must be taken in a,b sequence. Prerequisite: 365.

384-3 Seminar in Printing Management. Subjects relating to some phase of printing plant operation, management problems or new graphic arts developments are assigned for original research and study. A comprehensive term report is required after periodic progress reports have been subjected to class discussion. Prerequisite: 379b.

401-3 History of the Cinema. History, esthetics, and appreciation of the cinema. Screenings of films of representative type and historical significance. Not open to students who have had GSC 349.

402-3 History of Still Photography. History, esthetics, and appreciation of still photography. Not open to students who have had GSC 348.

411-1 to 10 Workshop in Still Photography. Work on magazine picture assignments and internships. Prerequisite: consent of department.

412-1 to 6 Workshop in Cinema Production. Crew work on university film productions. Prerequisite: consent of department.

428-3 Managing the Industrial Photographic Unit. A study of practices, procedures, administration, and management of typical units.

429-3 Photographic Methods in Science and Technology. Photomicroscopy, specimen photography, infrared and ultra-violet photography, high-speed and time-lapse motion pictures, slide and filmstrip making.

431-1 to 6 Problems in Still Photography and Cinematography. Special projects for advanced students in still photography and cinematography. By permission.

Psychology

211-8 (4,4) Principles and Methods of Psychology. An introduction to the experimental methods utilized in the study of behavior. (a) The application of methods to the study of sensation, perception, and learning; (b) the analysis and interpretation of psychological data. Lecture and laboratory. Prerequisite: GSB 201c.

301-4 Child Psychology. A study of the biological and psychological development of the child from birth through puberty, and of relevant research methods and results. Prerequisite: GSB 201c.

GSA 302-3 Psychobiological Foundations of Behavior.

303-4 Adolescent Psychology. Examines the physical and psychological development of the adolescent, and the relevance of childhood development to adolescent problems. Prerequisite: GSB 201c.

304-4 Psychology of Maturity and Old Age. A consideration of psychological factors in later maturity and old age and their concomitant problems, both individual and societal. Prerequisite: GSB 201c.

305-4 Psychology of Personality. A study of the inferred patterns underlying an individual's unique reactions to his environment. Investigates the motivations, development, and methods of changing these patterns, and how personality processes are studied. Prerequisite: GSB 201c.

307-4 Social Psychology. Introduction to the study of the individual's interaction with his social environment. Considers problems of social learning, attitude formation, communication, social influence processes and group behavior. Prerequisite: GSB 201c.

311-4 Experimental Psychology: Learning. Investigates the processes governing behavioral change. Experimental studies of conditioning, memory, and forgetting will be emphasized. Laboratory work will include the design and conduct of experiments with humans and animals. Lecture and laboratory. Prerequisite: 211a,b.

312-4 Experimental Psychology: Perception. Investigates the variables influencing an organism's stimulation by his environment. The structure and operation of the sense organs as well as complex perceptual phenomena are examined in lectures and laboratory. Prerequisite: 211a,b.

313-4 Experimental Psychology: Motivation. An examination of both biological and social variables influencing the activation, direction, and maintenance of behavior. Laboratory work will examine the effects of motivation upon behavior. Lecture and laboratory. Prerequisite: 211a,b.

314-4 Experimental Psychology: Comparative and Physiological. An examination of the physiological and phylogenetic variables affecting behavior. The laboratory will involve work with different types of organisms, emphasizing physiological concomitants of behavior. Lecture and laboratory. Prerequisite: 211a,b.

320-4 Industrial Psychology. A study of the use of psychological methods in the analysis of human factors problems in business and industry. Prerequisite: GSB 201c.

322-4 Personnel Psychology. A study of the use of psychological methods in

the selection, placement, and evaluation of personnel in business and industry. Prerequisite: GSB 201c.

323-4 Psychology of Employee Relations. Job satisfaction and morale, psychological aspects of labor relations, interviewing methods, and human relations training. Lecture. Prerequisite: GSB 201c.

399a-3 to 9, 399b-3 to 12 Research and Investigation. Honors. Intensive study in selected areas for students qualified for honors work in psychology. A research paper or equivalent will be required. Prerequisite: consent of chairman. (a) For juniors; (b) for seniors.

404-4 Theories of Perception. An examination of the different theories concerned with an organism's sensory contact with his environment. Physiological, social, and organizational theories of perception will be considered. Prerequisite: 312 or consent of instructor.

406-4 Learning Processes. Processes by which individual behavior is changed, using procedures developed in the learning laboratory. Introduction to major concepts and data of learning. Prerequisite: 311 or consent of instructor.

407-4 Theories of Learning. Consideration of contemporary theories and their relation to experimental data. Prerequisite: 211a, b or consent of instructor.

408-4 Theories of Motivation. An examination of instinct theories, biological drives, emotions, social motives, and psychodynamic theories as they contribute to a comprehensive psychology of motivation. Prerequisites: 313 or consent of instructor.

409-4 History and Systems. Study of the important antecedents of contemporary scientific psychology. Considers issues, conceptual developments, and research advances, and presents the major schools and systems. Prerequisite: signed consent of psychology adviser.

421-4 Psychological Tests and Measurements. Principles of psychological measurement, including errors of measurement, techniques for estimating reliability and validity, techniques of test construction, and problems in assessment and prediction. The laboratory will include the use of selected instruments. Lecture and laboratory. Prerequisite: 211b or consent of instructor.

424-4 Psychophysical Methods. Survey of the major psychophysical methods, and their applications. Lecture and laboratory.

431-4 Psychopathology. Classification, description, etiology and treatment of the disorders of personality organization and behavioral integration. Observations in a state mental hospital setting. Prerequisite: 305 or consent of instructor.

440-4 Theories of Personality. A review and critical evaluation of major personality theories and their supporting evidence. Prerequisite: 305 or consent of instructor.

451-4 Advanced Child Psychology. An examination of the concepts, methods, and problems of human development with consideration of both its psychological and psychosocial aspects. Prerequisite: 301 or 303 or consent of instructor.

459-4 Theory and Practice in the Preschool. Designed for those in nursery education and related fields. Examines the variety of topics and provides lectures, demonstrations, and practicum experience in the child study cooperative nursery. Prerequisite: consent of instructor.

461-4 Advanced Social Psychology. Examines current areas of interest in the study of social behavior: language behavior, communication, social influence, attitude change, interpersonal perception, etc. Emphasis is on the individual in the social context. Prerequisite: 307 or consent of instructor.

465-4 Group Dynamics and Individual Behavior. Examination of research and theory in the area of small-group interaction. Examines such topics as group structure and function, group-solving, leadership, etc. Prerequisite: 307 or consent of instructor.

471-4 Work Methods and Measurement. A study of the analysis and evaluation of jobs and the measurement of work performances by the use of standard time tables. Prerequisite: 320 or consent of instructor.

490-1 to 16 Independent Projects. Independent readings and projects in psychology. Prerequisite: consent of instructor and chairman.

495-1 to 18 Seminar: Selected Topics. Varied content. To be offered from time to time as need exists and as faculty interest and time permit. Prerequisite: consent of department.

501-12 (4,4,4) Proseminar in General Psychology.

509-4 Instrumentation in Behavioral Science.

512-4 Sensory Processes.

- 514-8 (4,4) Physiological Psychology.
- 520-4 Research Design and Inference I.
- 521-4 Research Design and Inference II.
- 522-4 Research Design and Inference III.
- 523-2 Research Seminar.
- 524-4 Advanced Research Methodology.
- 525-4 Mental Test Theory.
- 530-4 Personality Theory and Dynamics.
- 531-2 to 4 Advanced Psychopathology.
- 532-2 Experimental Approaches to Personality.
- 533-3 Experimental Approaches to Psychopathology.
- 536-4 Fundamentals of Counseling.
- 537-4 Counseling and Psychotherapy.
- 538-2 Group Psychotherapy.
- 541-4 Psychodiagnostics I.
- 543-6 (4,2) Psychodiagnostics II.
- 545-2 Psychodiagnostics III.
- 546-3 to 4 Psychodiagnostics for Special Populations.
- 547-2 Assessment Procedures in Counseling.
- 552-4 Experimental Child Psychology.
- 554-2 Developmental Theory.
- 556-2 Psychological Treatment of the Child.
- 561-4 Social Influence Processes.
- 562-4 Observational Techniques and Content Analysis.
- 564-4 Communication and Group Behavior.
- 571-4 Industrial Motivation and Morale.
- 572-4 Industrial Training.
- 573-4 (2,2) Employee Selection and Evaluation.
- 574-2 Psychology of Industrial Relations.
- 576-2 to 4 Human Engineering.
- 590-1 to 16 Readings in Psychology.
- 591-1 to 36 Research in Psychology.
- 593-1 to 18 Practicum in Psychology.
- 595-1 to 18 Advanced Seminar.
- 598-2 Ethical and Professional Problems in Psychology.
- 599-1 to 9 Thesis.
- 600-1 to 45 Dissertation.

Radio-Television

- 161-4 Radio-Television Speaking. Oral and visual speaking techniques for various radio and television speaking situations such as studio announcing, musical and dramatic programs, interviews and newscasts. Extensive microphone and on-camera practice. Audio and video tape recording sessions, as well as radio and TV studio facilities for practice and performance.
- 251-3 Survey of Broadcasting. Examinations of the history of the American system of broadcasting, including discussions of the industry, network structure, and local station organization and economics. Similar examination of various systems of foreign broadcasting.
- 252-3 Broadcast Production Analysis. A comprehensive examination of requirements and techniques of effective broadcast productions, both radio and television, with specific production improving procedures. A basic requirement for those who would create and write effective broadcast productions of any magnitude, whether for commercial or educational broadcasting.
- 260-3 Audio Control Room Practices. Familiarization with and operation of Radio and Television Audio Control Room equipment, such as audio control consoles, turntables, tape recorders and microphones (types, and proper placement). This course also includes familiarization and operation of remote broadcasting equipment and facilities. Preparation for FCC Third Class License with broadcast endorsement. Recommended for Radio-TV Concentrations only.
- 310-3 Radio-TV News. The basic techniques of writing, re-writing, and editing news from local and wire service sources, for presentation on radio and television. Actual practice with the WSIU and WSIU-TV facilities are stressed. Prerequisite: Journalism 103, 201, 202, and 303.

351-5 Programs and Audiences. The structure of broadcast programs, programming objectives, audience characteristics, analysis methods, preparation of station program schedules. Development, organization and planning of new programs within limitations of budgets and local situations. Program revising. Prerequisite: 251.

352-4 Broadcast Laws and Policies. Legal aspects of broadcasting in America. Precedent legal cases and actions by the Federal Communications Commission. Industry and network codes. International agreements. Prerequisite: 251.

353-2 Radio and Television in Education. The history and role of radio and television in education. Philosophies for education by radio and television. Analysis of types of educational broadcasting, including in-school broadcasting, adult education, and service programs.

355-3 Broadcast Persuasion Factors. The analysis of persuasion factors and audience responses in terms of program schedules and production. Prerequisite: 351.

360-3 Radio Announcing. Radio Announcing techniques and extensive practice for various announcing situations. Emphasis is placed on vocal development and interpretation. Numerous audio recordings. Two 1-hour lectures and 2-hour laboratory each week. Prerequisite: minimum grade of C in 161.

361-3 Television Announcing. Television announcing techniques for such situations as voice-over-film, special events, on-camera studio programs, and commercial presentations. Television studio facilities and video tape facilities for practice and performance. Prerequisite: minimum grade of C in 161.

363-4 Radio Program Production. Techniques of producing and directing radio programs with emphasis on creative use of sound effects and music. Two hours of lecture and 4 hours of lab each week. Lab hours are devoted to actual production of radio programs for use on WSIU. Prerequisite: 260.

364-4 Television Production. The principles and procedures of television production. An examination of the various studio and control room personnel and their functions in production. An analysis of purposes, theories, and techniques that lead to excellence in quality television production. Prerequisite: 252.

367-3 Radio-Television Production Survey. General survey of production problems in radio and television, including problems of writing, announcing, production, direction, sales and management. No prerequisites. For Nonmajors only.

369-4 Television Directing. Instruction and practical experience in the directing of television programs. Techniques of directing all types of programs including news, instructional, remotes, panel and music. Two 1-hour lectures and one 4-hour laboratory each week. Prerequisite: 364.

370-2 Films for Television. The use of films and video tape in the television industry. Included are sections on local film production as well as programming and securing syndicated programs from outside sources. This course is designed for the student concentrating in television interested in programming and management.

371-3 Techniques of Staging, Lighting and Graphics for Television. A study of television studio set design, the various techniques of studio lighting, and the special demands of the graphic arts in television production. Prerequisite: 364 or consent.

373-1 to 2 Advanced Radio Production Laboratory. Staff work on WSIU-FM including actual production of radio programs from conception through completion. May be repeated. Must be repeated by students concentrating in radio-television for a total of 4 hours minimum, 8 hours maximum, but combined total of 373 and 374 cannot exceed 12 hours. Prerequisite: 363 or concurrently.

374-1 to 2 Advanced Television Production Laboratory. Staff work on WSIU-TV and Closed Circuit Television operations, including actual production of television programs from conception to completion. May be repeated. Must be repeated by students concentrating in radio-television for a total of 4 hours minimum, 8 hours maximum, but combined total of 373 and 374 cannot exceed 12 hours. Prerequisite: 364.

375-1 to 4 Problems in Radio-television Programming.

375j-1 to 2 Individual Research Problems. May be repeated, but for no more than a total of 4 hours. Assignments to be made through consultation with the chairman.

375n-1 to 2 Production Problems. May be repeated, but for no more than a total of 4 hours. Assignments to be made through consultation with radio-television instructors.

377-3 Radio and TV Advertising. Study and practical radio-television experience in designing and developing promotional and publicity campaigns for the radio and television media. Scope of study includes radio and television advertising and sales techniques, methods and skills. Prerequisite: Journalism 370 and 371, or consent.

383-4 Broadcast Writing. Various forms for radio and television including continuity, spot, feature, and program. Prerequisite: 363, 364.

385-2 to 4 Radio-TV Special Events. Actual practice in the production, from conception to completion, of various types of special news programs for radio and television, including newscasting, sports casting, special events broadcasting, women's programming, children's programming, farm programming, and home economics programming. May be repeated for a total of 4 hours. Prerequisite: 310.

390-5 Broadcast Station Management. Objectives, procedures, equipment, costs, and policies in radio and television station development, management and operation. Prerequisites: 251, 351, 352.

393-3 Radio, Television, and Society. The interrelation of radio and television with social habit patterns and with economic and political systems. International broadcasting. Prerequisite: 251, 351, 352.

Recreation and Outdoor Education

201-3 Leisure and Recreation. Basic philosophical and historical foundations and development of leisure and recreation in light of economic, political, and social change.

202-3 Programs in Recreation. A study of essential elements and basic principles involved in the organization and administration of various types of recreation programs with emphasis on leadership processes. Prerequisite: 201.

301-4 Outdoor Education. To acquaint students with the philosophy and techniques of teaching in the out-of-doors. Ways and means of various outdoor learning experiences.

302-3 Institutional Recreation. An introduction to the philosophy, objectives, and basic concepts of therapeutic recreation. Emphasis on rehabilitation needs and "team" approach within institutional and community setting. Prerequisites: 201, 202.

310-2 to 8 Social Recreation. Methods and materials for planning and conducting social activities: (a) techniques; (b) dramatics; (c) leisurecrafts and (d) music and dance for groups of varying sizes and ages in a variety of social settings.

320-3 Nature Interpretation. Acquaints the student with opportunities for the interpretations of the natural phenomenon. Avocational as well as the vocational aspects of natural resources.

330-3 Campcraft. Leadership skills in the use of native materials and simple tools; identification and dietary use of wild fruits, berries and plants; outdoor cooking; construction of shelters and camp facilities; and other campcrafts.

340-3 Activities for Special Populations. Methods, materials, and leadership techniques for conducting social recreation for the physically handicapped, the mentally retarded, the aged, and other special populations. Prerequisite: 302.

360-4 Playground Administration.

365-4 Recreation Administration. Administrative procedures in park and recreation departments—organization, finance, personnel, facilities, program, public relations, and other areas of administration. Prerequisites: 201, 202, and 15 hours of recreation.

368-4 Camp Management. Principles and procedures of selection and supervision of personnel, program planning, food preparation, health and safety, camp maintenance, evaluation, and other responsibilities of camp administration. Prerequisites: 201, 202, and 15 hours of recreation.

413-4 Safe and Healthful Living Outdoors.

425-4 Recreation Areas and Facilities. Principles of planning, construction, management, and maintenance of shelters, utilities, sanitation structures, erosion control, and other related problems. Prerequisites: 201, 202, and 15 hours of recreation.

490-4 to 16 Practicum. Supervised practicum experience in a professional setting. Emphasis on administrative, supervisory, teaching and program lead-

ership in community, school, park and forest, institutional, and other recreation settings. Prerequisite: consent of department.

500-4 Principles of Recreation.

510-4 Outdoor Education Workshop.

520-4 Recreation Administration Workshop.

525-4 Special Population Workshop.

535-4 School and Community Recreation.

540-4 Recreation Survey and Planning of Facilities.

570-4 Seminar in Recreation and Outdoor Recreation.

596-2 to 9 Independent Study.

Religious Studies

201-6 Biblical Studies. (a) Old Testament History and Literature; (b) New Testament History and Literature.

203-9 History of Western Religious Thought. (a) Early and Medieval. (b) Reformation Era; (c) Post Reformation and Modern.

301-3 Contemporary Western Religious Thought. A critical evaluation of current religious thought and movements.

Secondary Education

310-4 History and Principles of Secondary Education. This course presents the nature, objectives, and current practices found in secondary schools throughout America. Prerequisite: Guidance 305 or Psychology 303, completion of 18 or more quarter hours in a declared concentration or consent of instructor.

315-3 High School Methods. Various types of procedures used for effective classroom teaching constitute the basis of study and discussion. The problem approach and unit method are stressed. Prerequisite: 310.

352-2 to 16 Secondary Student Teaching.

375-2 to 3 Readings in Secondary Education. Readings are selected on the basis of each student's background and future plans.

402-4 Aerospace Education Workshop. Teachers learn about current developments in this area and how to incorporate aerospace information into existing curricula. They study in some detail the social, political, and economic consequences of this era. Prerequisite: consent of instructor.

407-4 The Junior High School. The place of the junior high school in the organizational pattern, with major emphasis upon the areas of organization, administration, and curriculum.

440-4 Teaching Reading in High School. A foundation course in how to teach reading in junior and senior high school: developmental and corrective reading programs; appraisal of reading abilities; methods and materials of instruction. Prerequisite: Guidance 305.

450-4 to 16-Field Training in Community Development Methods.

488-3 Teaching Social Studies in Secondary Schools. Deals with objectives, scope and sequence of curriculum, methods of teaching different courses and age groups, materials and evaluation. Prerequisite: Guidance 305.

490-4 Workshop in Economics Education. (See Economics 490.)

495-2 to 4 Seminar in Problems Related to Teaching Disadvantaged Youth.

506-4 Reading in the Secondary School.

507-2 to 4 Readings in Reading.

508-4 Seminar: Trends in Selected Areas in Secondary Schools.

509-4 to 8 Practicum in Reading.

510-4 to 8 Seminar: Problems in Reading.

514-4 Organization and Administration of Reading Programs.

516-8 to 12 Internship in Reading.

518-2 Supervision of Student Teachers.

521-12 (4,4,4) Diagnosis and Correction of Reading Disabilities.

544-9 NDEA Summer Institute for Teachers of German.

550-4 Core Curriculum in the Secondary School.

560-1 to 8 New Developments in Technological Education.

562-4 The High School Curriculum.

564-4 High School Principalship.

- 575-2 to 4 **Individual Research.** (Selected areas with 2 to 4 hours in each.)
 586-3 **The Change Agent in Planned Change.**
 589-2 **Seminar in Community Development.**
 591-4 **Workshop in Current Problems in Secondary Education.**
 596-5 to 9 **Independent Investigation.**
 599-3 to 9 **Thesis.**
 600-1 to 48 **Dissertation.**

Secretarial and Business Education

- Tests are given during the first week of all shorthand and typewriting courses to insure the correct placement of students in classes.
- 201-9 (3,3,3) Typewriting.** Mastery of the keyboard, speed and accuracy in the touch operation of the typewriter, and skill and knowledge needed for vocational and personal uses. Must be taken in a,b,c sequence. (a) May not be taken for credit by students who have had previous high school or other formal instruction in typewriting; (b) Prerequisite: 201a or one semester of other formal instruction in typewriting and the ability to type at least 30 words per minute; (c) Prerequisite: 201b or two semesters of other formal instruction in typewriting and the ability to type at least 40 words per minute and to prepare simple business correspondence, tables, manuscripts and forms.
- 221-12 (4,4,4) Shorthand and Transcription.** The Gregg shorthand system and the development of skill and knowledge required in taking dictation and transcribing it on the typewriter. Must be taken in a,b,c sequence. (a) May not be taken for credit by students who have had previous high school or other formal instruction in shorthand; (b) Prerequisite: 221a or one semester of other formal instruction in shorthand-transcription; (c) Prerequisite: 221b or two semesters of other formal instruction in shorthand-transcription and the ability to take sustained, new-matter dictation at 60 words per minute.
- 241-1 Duplicating.** Skills and knowledges in (1) the preparation of master copies and stencils and (2) the operation of liquid and stencil duplicating machines. Prerequisite: 201 or equivalent.
- 242-1 Calculating Machines for Accountants.** Fundamental knowledges and skills needed by accountants in the selection and use of calculating machines. Emphasis on special problems encountered by accountants.
- 304-3 Advanced Typewriting.** Development of advanced skills in typing business correspondence, manuscripts, forms, and tables; preparation of copy from rough draft materials. Prerequisite: 201-9 or three semesters of other formal instruction in typewriting and the ability to type at least 50 words per minute and to prepare business correspondence, tables and manuscripts.
- 324-8 (4,4) Advanced Shorthand and Transcription.** The development of high-level dictation and transcription skills and knowledges. Must be taken in a,b, sequence. Prerequisites: (a) 221-12 or three semesters of other formal instruction in shorthand-transcription and the ability to transcribe on the typewriter sustained, new-matter dictation taken at 80 words per minute. (b) 324a or four semesters of other formal instruction in shorthand-transcription and the ability to transcribe on the typewriter sustained, new-matter dictation taken at 100 words per minute.
- 326-4 Executive Secretarial Procedures.** An advanced course for secretaries, covering such topics as personality and human relationships, office mail, office equipment, travel, sources of information, communications, and business reports. Prerequisite: 304.
- 341-4 Office Calculating Machines.** Operation of basic types of office calculating machines, emphasizing the characteristic uses of each kind of machine in the office. Laboratory practice required.
- 403-3 Teaching Typewriting.** Methods of instruction, skill-building principles and techniques, selection and preparation of instructional materials, standards of achievement, and evaluation of pupil performance. Prerequisite: 201c or equivalent.
- 404-3 Teaching Shorthand and Transcription.** Methods of instruction, skill-building principles and techniques, selection and preparation of instructional materials, standards of achievement, and evaluation of pupil performance. Prerequisite: 324a or equivalent.
- 405-3 Teaching General (Basic) Business Subjects.** Instructional methods and materials for, and the evaluation of pupil progress in, such basic business

subjects as general business, consumer education, economic geography, business law.

406-4 Teaching Office Practice and Office Machines. Instructional methods and materials for, and the evaluation of pupil performance in, office practice and office machines. Prerequisite: 341 or equivalent.

408-3 Teaching Bookkeeping and Accounting. Instructional methods and materials for, and the evaluation of pupil progress in, bookkeeping and accounting. Prerequisite: Accounting 251b or equivalent.

414-6 (3,3) Organization and Administration of Cooperative Vocational Business Education Programs. Prepares teachers and coordinators in accordance with the requirements of the Illinois State Plan for the Administration of Vocational Education. Philosophy and objectives of cooperative vocational programs, methods of selecting students and work stations, placing and supervising students on part-time jobs, preparation of instructional materials, job analyses, conducting related information courses, evaluating workers and work stations, advisory committees, public relations aspects of cooperative programs.

415-6 Supervised Business Experience and Related Study. Prepares teachers and coordinators in accordance with the requirements of the Illinois State Plan for the Administration of Vocational Education. Classroom study of the principles and problems of coordinating in-school and cooperative vocational business education programs; supervised occupational experience; classroom analysis and evaluation of on-the-job experiences of the members of the class in relation to their future work as coordinators and vocational teachers.

426-4 Office Management. The principles of management as applied to office problems. Emphasis on the role of the office in business management; office organization; physical facilities and layout of the office; office services, procedures, standards, and controls.

427-4 Records Administration. The development of records management from its inception, and the recognition of the need for paper work management. Stress on the use of information management techniques in support of organization management, control and evaluation. The course includes each phase of the life of records from creation to disposal or permanent retention. The capabilities of data processing, microphotography, and new developments in information handling equipment stressed throughout.

500-2 to 5 Readings in Business Education.

501-2 to 5 Individual Research in Business Education.

502-4 Research in Business Education.

503-4 Tests and Measurements in Business Education.

505-1 to 6 Workshop in Business Education.

506-4 Principles and Problems of Business Education.

508-4 Administration and Supervision in Business Education.

509-4 Improvement of Instruction in General (Basic) Business Subjects.

510-4 Improvement of Instruction in Secretarial Subjects.

599-1 to 9 Thesis.

Sociology

Courses in sociology are listed according to numerical order. However, the second digit in the course number indicates its field as follows:

00-09 General Sociology

10-19 Methodology and Research Techniques

20-29 Social Psychology

30-39 Social Organization and Structure

40-49 Family

50-59 Sociology of Knowledge

60-69 Social Disorganization and Deviance

70-79 Special Fields

80-89 Applied Field

301-4 Principles of Sociology. The structure and functions of social relationship systems, both simple and complex. Analysis of processes of social differentiation, integration, and disorganization. Prerequisite: junior standing.

302-4 Contemporary Social Problems. Discussion and analysis of selected contemporary social problems with consideration of alternative courses of action. Prerequisite: 301.

305-4 Social Institutions. Concepts of institutions; origins, development, and variability of institutions; institutional lag and change. Prerequisite: GSB 201b or 301.

306-4 Social Control. The means and principles of social controls; social institutions as factors in control; techniques of directing social action. Prerequisite: GSB 201b or 301.

308-3 Statistics for Social Science. Methods and application of statistics in the social sciences. Statistical methods in demography, ecology, testing and guidance, social problems. Examination of empirical studies in these and related areas. Prerequisite: junior standing or consent of instructor.

312-4 Elements of Sociological Research. Types of research. Principles and steps in research procedure. Selected techniques. Prerequisite: 308 or equivalent.

GSB 321-3 Socialization of the Individual.

322-4 Propaganda and Public Opinion. Techniques and characteristics of propaganda; methods of measuring public opinion. Prerequisite: 301, or GSB 201b.

GSB 325-3 Race and Minority Relations.

332-4 Social Organization. An examination of the determinants of social organization; intensive analysis of institutional configurations, social stratification, and systems of social control; review of significant writing. Prerequisite: 301.

333-4 Community Organization. Factors involved in community organization; types, aims, and objectives; community diagnosis; individual case study of specific community. Prerequisite: 301 or GSB 201b.

335-4 Urban Sociology. The rise, development, structure, culture, planning, and problems in early and modern cities. Prerequisite: 301 or GSB 201b.

336-4 Sociology of Rural Life. The structure, functioning, and change of rural social life; study of informal groups, neighborhoods, and communities; social class and value orientation. Prerequisite: GSB 201b, or 301.

338-4 Industrial Sociology. Social organization and processes within the formal and informal structure of the industrial unit; research and experimental materials concerning social determinants of morale, status and role of the worker. Prerequisite: GSB 201b or 301.

340-4 The Family. The family in historic and contemporary society; evolution of the modern family; changes in family functions, structures, and roles. Prerequisite: GSB 201b or 301.

GSB 341-3 Marriage.

351-4 Sociology of Religion. Function of religious institutions in society and their relationship to other major social institutions; role in social control and group solidarity. Prerequisite: GSB 201b or 301.

371-4 Population and Migration. Characteristics of population, problems of growth, composition, distribution, differential fertility, international and internal migration. Prerequisite: 301 or consent of instructor.

372-4 Criminology. The nature of crime; criminal statistics; causal factors; theories and procedures in prevention and treatment. Prerequisite: GSB 201b or 301.

373-4 Juvenile Delinquency. Nature of juvenile delinquency; factors contributing to delinquent behavior; treatment and prevention. Prerequisite: GSB 201b or 301.

374-4 Sociology of Education. Methods, principles, and data of sociology applied to the school situation; relation of the school to other institutions and groups. Prerequisite: consent of instructor, or GSB 201b or 301.

375-4 Social Welfare as a Social Institution. Interdependence of social, cultural, political and economic factors in the history, theory and practice of social welfare, with special reference to development of the social work profession in response to welfare problems. Prerequisite: GSB 201b or 301.

383-4 Introduction to Interviewing. Theory and practice of interviewing as a means of gaining information, and of understanding and imparting the same. Focus is on the interview as a tool in social work, but principles are generally applicable. Prerequisite: GSB 201b or 301.

406-4 Social Change. Processes of social change in the modern world; culture lag and conflict of norms; individual and social problems arising from conflicting systems of social values and cultural norms. Prerequisite: GSB 201b or 301.

412-4 Sociological Research. Application of the scientific method to sociolog-

ical problems. The role of theory. Principles of good research design, measurement, sampling and analysis. Prerequisite: Graduate status or consent of instructor.

415-3 Logic of the Social Sciences. (See Philosophy 415.)

424-4 Collective Behavior. The behavior of people in large groups; collective interstimulations and emotions; crowds, audiences, and publics; mass stimuli and mass response. Prerequisite: GSB 321 or 322, or consent of instructor.

426-4 Social Factors in Behavior and Personality. How group situations and values affect behavior and shape personality; development of concepts, role-concepts, attitudes, values; theories of motivation; self-concepts; conflicting social values in relation to individual motivation. Prerequisite: GSB 321 or Psychology 305, or consent of instructor.

427-4 Personality and Social Adjustment. Basic mechanisms of adjustive behavior; concepts and criteria of personal integration and social adjustment; varieties of adjustive and nonadjustive behavior; theories of personal organization and disorganization; selected problems. Prerequisite: GSB 321 or Psychology 305 or consent of instructor.

435-4 Social Stratification. A comparative study of social class systems, with emphasis on the American systems. Relationships of class position to behavior in family, religion, politics, etc. Prerequisite: GSB 201b, or 301.

438-4 Sociology of Occupations and Professions. Natural history and institutional aspects of occupations in our society, cultural context of occupations in both primitive and modern society, preparation for jobs, human values in work, promotion and discharge, mobility, retirement. Prerequisite: GSB 201b, or 301.

449-4 Sociology of Aging. The social implications of an aging population; social adjustments to the aging process; personal adjustments to the roles and statuses of later maturity; a consideration of retirement and public assistance programs for older people. Prerequisite: GSB 201b or 301.

450-4 Social Thought I: Before 1800. The ideological basis of Western society. The classical foundations. Trends of thought from the Renaissance to the Enlightenment. Prerequisite: consent of instructor.

451-4 Social Thought II: The Sociological Movement. From Romanticism to Realism; rise and development of scientific social thought. Prerequisite: consent of instructor.

453-4 Social Movements. A sociological study of modern social movements; social and cultural backgrounds, forms of expression and organization; social structure of social movements, their role and function in modern society. Prerequisite: GSB 201b or 301.

471-4 Principles of Demography. Techniques in analyzing and evaluating data on human population; composition, birth and death rates, life tables, migration data, estimates of future trend. Practical uses of demographic techniques. Prerequisites: consent of instructor.

472-4 The American Correctional System. Principles of penology; history of punishment and prisons; criminal law, police function, criminal courts; the prison community; the juvenile court and related movements. Prerequisite: 372 or consent of instructor.

481-4 Processes in Social Work. Theory, rationale, and practice of casework, group work, social welfare organization, and the roles of supervision, administration, and research in relation to each. Case material study and discussion with field observation and practice. Prerequisite: 375 or consent of instructor.

482-3 Social Work in Selected Agencies. Study of representative literature on casework in family, psychiatric, medical, school, military, child welfare, and correctional settings, and others. Case material study and discussion with field observation and practice. Prerequisite: 481.

483-4 Current Problems in Corrections. An exploration of contemporary problems in control and treatment of sentenced offenders, and a review of research trends in corrections. Prerequisite: 472 or consent of instructor.

484-3 Survey Course in Marriage Counseling. Survey and analysis of the field of marriage counseling; assessment of current practices and techniques in terms of contemporary sociological theory. Prerequisites: GSB 341, and consent of instructor.

486-1 to 5 Independent Study in Community Development. Individual study and projects designed to fit the needs of each student. Prerequisite: consent of instructor.

487-7 (4,3) Community Development. (a) The concepts of community devel-

opment and analysis of the social-psychological forces and processes involved in citizen study, planning and action directed toward the fuller development of communities in a democratic society; (b) Principles and procedures applicable to solving social problems in the context of a community development program. Laboratory period for field trips. Must be taken in a,b sequence. Prerequisite: 4 hours of sociology or equivalent.

489a-4 Probation, Classification, and Parole. An introduction to the structure and function of those elements of the correctional process primarily concerned with the evaluation, treatment, and control of offenders with particular attention to the casework components of the process. Prerequisite: 481 or consent of instructor.

489e-2 to 4 Independent Study in Corrections. Supervised readings or independent investigative projects in the various correctional aspects of crime control, institutional management, and specific correctional programs. Prerequisite: consent of instructor.

501-4 Survey of Sociological Theory.

502-4 Seminar in European Sociological Theory: 1800-1910.

503-4 Seminar in European Sociological Theory: 1910 to the Present.

504-4 Seminar in American Sociology.

506-4 Seminar in Contemporary Sociological Theory.

513-2 Supervised Research.

519-4 Methodological Foundations of the Social Sciences.

521-4 Seminar in Social Psychology.

526-4 Quantitative Methods in Sociology I.

527-4 Quantitative Methods in Sociology II.

528-4 Quantitative Methods in Sociology III.

529-4 Sociological Measurement.

530-4 Research Design.

531-4 Research Analysis.

533-4 Ecology of Human Communities.

534-4 Seminar in Intergroup Relations.

535-4 Race and Education in American Society.

537-4 Sociology of Law.

538-4 Seminar in Industrial Sociology.

539-4 Sociology of Bureaucracy.

542-4 Seminar on the Family.

543-4 Seminar in Family Variability.

544-4 Seminar in Family Research.

545-4 The Family and Social Change.

561-4 Alcohol and Society.

562-4 Deviance and Disorganization.

563-4 Research Problems in Deviance and Disorganization.

564-4 Social Factors in Mental Disorders.

566-4 Community Organization and Disorganization.

572-4 Seminar in Criminology.

582-4 Criminal Law and the Correctional Process.

583-4 to 12 Supervised Field Work in Corrections.

584-4 Seminar in Correctional Program Management.

586-3 The Change Agent in Planned Change.

587-2 to 8 Individual Research in Community Development.

591-2 to 6 Individual Research.

596-2 to 12 Readings in Sociology.

599-2 to 9 Thesis.

600-1 to 48 Dissertation.

Special Education

200-2 Orientation to the Education of Exceptional Children. A survey of exceptional children. Program modification by regular classroom teachers is stressed.

406-4 Techniques and Interpretation of Hearing Tests. (See Speech Pathology and Audiology 406.)

410a-4 Problems and Characteristics of the Emotionally Disturbed Child. Diagnosis, screening, classroom management, placement considerations, goals, and the effective use of ancillary services. Emphasis on the understanding of

maladaptive behavior through principles of learning and behavior dynamics. Prerequisite: Psychology 301 or 303, or consent of instructor.

410b—4 Problems and Characteristics of the Mentally Retarded Child. Objectives, curriculum, methods, and materials of instruction for slow learners. Emphasis upon the principles of learning as they can be applied to this group. Observations. Prerequisite: Psychology 301 or 303, or consent of instructor.

410c—4 Problems and Characteristics of the Gifted Child. Designed to help teachers in the identification of and programming for gifted and talented children. Prerequisite: Psychology 301 or 303, or consent of instructor.

410d—4 Problems and Characteristics of the Acoustically Handicapped Child. Consideration of psycho-social and educational aspects of deafness. History and attitudes of society. The impact of auditory impairment on language development, education, and adjustment. Prerequisite: Psychology 301 or 303, or consent of instructor.

411—4 Assessment and Remediation of Learning Disabilities. (Same as Guidance 411.) Special tests and remedial programs designed for children with specific learning disabilities of a perceptual, or coordination nature and who may demonstrate related adjustment problems. Prerequisite: 414 and consent of instructor.

413a—4 Directed Observation of Emotionally Disturbed Children. Student observation and participation in group and individual work with emotionally disturbed children. Often taken concurrently with 410a. Prerequisite: consent of instructor.

413b—4 Directed Observation of Mentally Retarded Children. Student observation and participation in group and individual work with mentally retarded children. Often taken concurrently with 410b. Prerequisite: consent of instructor.

413d—4 Directed Observation and Practice with Hard-of-Hearing Children. Student observation and participation in group and individual work with hard-of-hearing children. Often taken concurrently with 515. Prerequisite: consent of instructor.

414—4 The Exceptional Child. Physical, mental, emotional, and social traits of all types of exceptional children. Effects of handicaps in learning situations. Methods of differentiation and techniques for rehabilitation. Individual case studies used; observations and field trips. Prerequisites: Psychology 301 or 303, or consent of instructor.

415—4 Education of Acoustically Handicapped Children. Comparison of language development in hearing and acoustically handicapped children. Survey of established systems of teaching language to the deaf. Principles and techniques in developing concepts, vocabulary, and basic English structures; receptive and expressive oral and written language. Prerequisite: consent of instructor.

416—4 Introduction to Audiology. (Same as Speech Pathology and Audiology 416.)

419—4 Communication Problems of the Deaf and Hard of Hearing. (Same as Speech Pathology and Audiology 419.) Objectives and techniques for the teaching of lip reading, speech conservation, and auditory training. Prerequisite: 406 or consent of instructor.

420a—4 Methods and Materials for Teaching Emotionally Disturbed Children. Prerequisite: 410a and consent of instructor.

420b—4 Methods and Materials for Teaching Mentally Retarded Children. Usually offered in conjunction with practice teaching. Prerequisite: 410b and consent of instructor.

420d—4 Methods and Materials for Teaching Acoustically Handicapped Children. Methods, materials, and techniques of teaching reading and elementary subjects to acoustically handicapped children in special education programs. Prerequisite: 410d and consent of instructor.

421—4 Speech for Acoustically Handicapped Children. A survey of methods in teaching oral language skill to acoustically handicapped children. Emphasis on use of visual, tactile, and kinesthetic sensory avenues in developing intelligible articulation, voice and sentence rhythm. Consideration of auditory training techniques in relation to speech development. Prerequisite: Speech Pathology and Audiology 200.

428—4 Speech Correction for the Classroom Teacher. (Same as Speech Pathology and Audiology 428.)

496—2 to 8 Readings and Independent Study in Special Education. Study of

a highly specific problem area in the education of exceptional children. Open only to selected seniors and graduate students. Prerequisite: 414 and consent of staff.

501-4 Special Research Problem.

513-4 Organization, Administration, and Supervision of Special Classes.

515-4 Itinerant Teaching of Exceptional Children.

517-4 The Atypical Child and Social Agencies.

518-4 Workshop in Special Education.

577-4 to 12 Practicum in Special Education.

580a-4 Seminar: Education of Maladjusted Children.

580b-4 Seminar: Education of Mentally Retarded Children.

580d-4 Seminar: Education of Acoustically Handicapped Children.

590-4 Seminar: Education of Children with Mental Deviations.

591-4 Seminar: Education of Physically Handicapped Children.

592-4 Seminar: Education of Children with Learning and Behavioral Disorders.

596-4 to 8 Independent Investigation.

599-2 to 9 Thesis.

600-1 to 48 Dissertation.

Speech

General Speech: 408, 429, 440, 449, 450-12, 520, 530-1 to 4, 532, 599-2 to 9, 600-3 to 48.

Oral Interpretation of Poetry: 423, 424, 434, 523, 530-1 to 4, 599-2 to 9.

Rhetoric and Public Address: 407-8, 417, 418, 425, 500, 504, 505, 508, 510, 524, 530-1 to 4, 599-2 to 9.

Speech Education: 402, 410, 427, 511, 525, 530-1 to 4, 599-2 to 9.

102-4 **Public Speaking.** Analysis of audience motives and reactions stressed in the approach to speech preparation for typical public speaking situations. Prerequisite: GSD 103.

104-4 **Training the Speaking Voice.** Designed for those students who desire to improve their voice and articulation. Prerequisite: GSD 103.

200-4 **Phonetics.** Instruction on the use of phonetic symbols to record the speech sounds of midland American English, with emphasis on ear training, and a description of place and manner of production of these sounds.

201-2 **Parliamentary Law.** How to conduct a meeting. Study and practice of the rules of parliamentary procedure.

202-3 **Principles of Discussion.** Principles and methods of group discussion. Current problems used as materials for discussion.

205-3 **Principles of Argumentation and Debate.** Principles of argument, analysis, evidence, reasoning, fallacies, briefing, and delivery.

209-1 **Forensic Activities.** Not more than 3 hours of credit, and no more than 2 each year, to be secured for participating in forensic activities. Note: A maximum of 5 hours of 209 and 309 may be applied on a concentration in speech. A maximum of 8 hours of 209 and 309 may be applied toward graduation. Prerequisite: consent of instructor.

300-4 **Phonetics of American English.** Study of the phonetics of American English with particular emphasis in the major American dialects. Course designed especially for concentrations in speech, theater, and radio-TV. Prerequisite: 200 or consent of instructor and chairman.

301-4 **Persuasion.** Psychological principles involved in influencing individuals and groups.

303-4 **Business and Professional Speaking.** Speaking needs of business and professional people. Technical reports and lighter types of speaking included in the types studied. Primarily for adult and extension classes.

304-3 **Great Speeches in American and British History.** Speakers as they deal with historic issues in America and Britain.

309-1 **Forensic Activities.** Not more than 4 hours, and no more than 2 each year, to be secured for participation in forensic activities. Note: A maximum of 5 hours of 209 and 309 may be applied on a concentration speech. A maximum of 8 hours of 209 and 309 may be applied toward graduation. Prerequisite: junior standing and consent of instructor.

313-4 **Speech Composition.** Rhetorical techniques of public address. One major

speech prepared, with every possible refinement. Prerequisite: 102.

323-4 Oral Interpretation II. A basic course in the oral interpretation of literature with emphasis on vocal techniques in relation to literary analysis. Prerequisite: GSC 200 or consent of instructor.

401-4 Creative Dramatics. A study of the materials, techniques, and procedures for conducting sessions in informal drama with emphasis on its contribution to the total growth and development of the child. Lectures, observations, student participation, and practice.

406-4 Teaching Speech in Secondary Schools. Philosophy of speech education, and effective teaching of speech through curricular and extra-curricular work. Prerequisite: 16 hours of speech.

407-8 (4,4) American Public Address. Critical studies of American speakers; selected speakers and speeches which reflect the dominant social and political ideas in American history. A lecture, reading, and discussion course. Parts may be taken independently.

408-4 Psychology of Speech. Nature and development of speech, its basic psychology, and the part speech plays in personality development.

417-4 Contemporary Public Address. A critical study of speakers and speeches selected to present the characteristic ideas of leading social and political developments in national and international affairs since 1918. A lecture, reading, and discussion course.

418-4 British Public Address. Critical study of British speakers to c. 1920. Selection of material will be governed both by men and the issues that moved men throughout British history.

422-4 Oral Interpretation of Prose. The study of reading of prose literature emphasizing the specific problems posed for the oral reader by this form. Prerequisite: GSD 200, 323, or consent of instructor.

423-4 Oral Interpretation of Poetry. The reading of poetry and the interpretation of the thought and emotional content of the poetry to the audience. Prerequisite: GSD 200, 323.

424-4 Oral Interpretation of Dramatic Literature. Reading, selecting, cutting, and presenting various types of dramatic literature. Each student gives a final recital program of readings. Prerequisites: GSD 200, 323.

425-3 Techniques of Discussion Leadership. Studies in the field of group discussion designed to clarify the functions and concepts of the leader in democratic society.

427-4 Secondary School Forensic Program. Coaching and organizational methods for extracurricular and curricular forensic programs in the secondary schools.

429-4 Experimental Studies in Oral Communication. A survey, analysis, and criticism of experimental approaches to the study of oral communication, with practice in planning and conducting experimental studies.

434-4 Lecture and Lecture-Recital. Study of professional work on the public platform which is climaxed by a lecture or recital of a professional nature. Prerequisite: 12 hours of public speaking, interpretation, or theater.

440-4 Advanced Phonetics. Phonetic theory. Materials and methods of linguistic geography. Prerequisite: 200.

441-4 Teaching Speech in Elementary Schools. Study of oral language development in children, analysis of their speech needs, and methods of teaching speech in elementary schools with emphasis on speech improvement and development of basic speech skills.

449-4 General Semantics. Means of changing implications so that language, in spoken or written form, describes the life facts.

450-12 (4,4,4) Laboratory in Interpersonal Communication. Communication viewed as a process of relating and evaluating. Applications of general semantics and related philosophy, methodology, and research to the functioning of the class itself through various speech activities. The course encompasses the common core of communication behaviors relevant to the chief communication specialties.

500-4 Survey of Classical Rhetoric.

501-10 NDEA Institute in Oral Communication.

504-4 Medieval Rhetorical Theory.

505-4 Modern Rhetorical Theory.

507-6 (3,3) Studies in Public Address.

508-4 Seminar: Studies in Discussion.

510-4 Seminar: Persuasion and Social Control.

- 511-4 (2,2) Teaching the College Speech Course.
- 520-3 Philosophical Foundations of Speech.
- 523-3 Seminar: Problems in Interpretation.
- 524-6 (3,3) Problems in Rhetoric and Public Address.
- 525-4 Seminar: Speech Education.
- 527-3 College Forensic Program.
- 530-1 to 4 Research Problems.
- 532-4 (2,2) Areas and Techniques of Research in Speech.
- 599-2 to 9 Thesis.
- 600-1 to 48 Dissertation.

Speech Pathology and Audiology

- 100-0 to 2 Speech Clinic. For students with speech and hearing deviations who need individual help.
- 104-4 Training the Speaking Voice. For those students who desire to improve their voice and articulation.
- 200-4 Phonetics. Instruction in the Use of phonetic symbols to record the speech sounds of midland American English, with emphasis on ear training, and a description of place and manner of production of these sounds.
- 203-4 Introduction to Speech Science. An introduction to the science of general speech including the history of research in the field and significant experimental trends in the future. Open to all students.
- 212-4 Articulatory Problems and Delayed Speech. Acquaints the student with articulatory speech defects. Diagnostic and therapeutic techniques stressed. Prerequisite: 200 or concurrent.
- 318-4 Voice and Cleft Palate. Voice disorders including cleft palate. Prerequisite: 212, or consent of instructor.
- 319-4 Stuttering. Deals with diagnostic and therapeutic techniques for the understanding and treatment of stuttering. Prerequisite: 212, or consent of instructor.
- 400-1 to 4 Independent Study in Speech Pathology and Audiology. Activities involved shall be investigative, creative, or clinical in character. Must be arranged in advance with the instructor. May be repeated for up to 6 hours.
- 405-12 (4,4,4) Practicum in Speech and Hearing Therapy. Clinical and school procedures in speech pathology and audiology. One hour of class per week, and 2 hours of clinical activity or work on clinically related projects for each hour of credit. (a) emphasizes therapeutic procedures; (b) emphasizes diagnostic techniques; (c) emphasizes the utilization of forms and the preparation of reports. Prerequisite: junior standing.
- 406-4 Techniques and Interpretation of Hearing Tests. Principles and techniques of testing the hearing and interpreting those tests in terms of the individual's needs. Prerequisite: 416 or consent of instructor.
- 409-4 Research Techniques in Speech Science. A presentation of the research techniques used in speech science with particular emphasis on equipment, experimental design, and study of significant research contributions to the field. Open to advanced students in speech or those with consent of instructor.
- 412-4 Cerebral Palsy. An investigation of the etiology, problems, and therapy of cerebral palsy. Prerequisite: 212, 414 or consent of instructor.
- 414-4 Anatomy and Physiology of Speech and Hearing Mechanisms. (See Physiology 414.)
- 415-4 Aphasia. An investigation of the etiology, problems, and therapy of aphasia. Prerequisite: 412, 414 or consent of instructor.
- 416-4 Introduction to Audiology. Provides the student with a basic orientation to the professional field of audiology, its history and its goals. Basic acoustics, the phylogeny, anatomy and physiology of the human ear, and significant pathologies of the ear are presented. Prerequisite: junior standing or consent of instructor.
- 419-4 Communication Problems of the Deaf and Hard of Hearing. (Same as Special Education 419.) Objectives and techniques for the teaching of lip reading, speech conservation, and auditory training. Prerequisite: 406 or consent of instructor.
- 420-4 Advanced Clinical Audiometry. Principles and procedures for advanced audiometric testing, advanced problems in bone conduction measurements, in evaluation of loudness recruitment, in topodiagnostic audiometry, and non-

organic hearing loss are presented. Practical techniques include speech audiometry, Bekesy audiometry, conditioned pure tone electrodermal audiometry, and use of the Zwislocki Acoustic Bridge. Prerequisite: 416 and 406 or consent of instructor.

421-6 (3,3) Speech for Acoustically Handicapped Children. (See Special Education 421.)

428-4 Speech Correction for the Classroom Teacher. (Same as Special Education 428.) Etiology and therapy of common speech defects. Open to in-service teachers, seniors, and graduate students in education.

515-1 to 4. Readings in Speech Pathology.

516-4 Seminar in Psychoacoustics.

520-4 Seminar in Physiological Acoustics.

521-1 to 4 Seminar in Articulation and Delayed Speech.

522-16 (4,4,4,4) Seminar in Organic Speech Problems.

528-4 Seminar in Experimental Audiology.

529-12 (4,4,4) Seminar in Stuttering Behavior.

530-1 to 4 Research Problems in Speech Pathology & Audiology.

531-1 to 4 Seminar in Experimental Phonetics.

533-1 to 4 Seminar in Speech Science

534-1 to 4 Seminar in Instrumentation.

536-1 to 4 Seminar in Administration of Speech and Hearing Problems.

599-2 to 9 Thesis.

600-1 to 48 Dissertation.

Technical and Industrial Education

217-4 General Typography. After brief introductory work in screen and block typography, major portion of course is devoted to study of foundry type, type classifications, use of job cases, hand typesetting, layout, use of illustrations, and proof-pulling. Laboratory.

302-4 Construction Methods for Primary Teachers. Various media such as wood, metal, and paper. Acquainting the primary teacher with the materials, tools, and processes which students at the primary level can manipulate and use in the classroom. Laboratory.

303-4 Diversified Crafts for Teachers and Recreational Leaders. Experience in constructional activities involving the use of wood, metals, leathers, plastics, reed, raffia, clay, and other materials adaptable to the needs and interests of camp counselors and elementary school leaders. Laboratory.

319-3 to 24 (3 per quarter) Industrial Internship. Industrial experience includes job skills, manufacturing processes, technical information, and labor-management relationships with supervised instruction, conferences and examinations. Required of Vocational Teachers. Prerequisite: consent of coordinator.

380-1 to 12 Special Skills in Teaching Technological Subjects. Develops new and special industrial skills for teaching industrial and technological subjects. For advanced students and teachers to develop new but basic manipulative skills and understandings in selected areas. Prerequisite: 12 hours in Technical and Industrial Education.

408-3 Teaching Aids in Technological Education. Selection, development, analysis, cataloging, and use of commercial and self-made instructional aids and devices.

419-8 to 16 Advanced Student Teaching in Technical Programs. Experience in working with special and post-high school technical training programs in approved centers. The student teacher will follow the program of the supervisors of the primary specialization in both regular and extra-class activities. Prerequisite: 9 quarter hours professional Industrial Education. (graduate students only)

425-2 to 8 Practicum in Technology. Experiences in the industrial applications of technological knowledge. Cooperative arrangements with selected corporations and professional organizations provide opportunity to study technical problems in the industrial environment under the direction of specialists. Prerequisite: 12 hours in technical subjects.

430-2 to 8 Special Problems in Industry and Technology. Special opportunity for students to obtain assistance and guidance in the investigation and solution of selected technical problems. Prerequisite: consent of instructor.

435-6 to 18 Manual Arts Internship. Supervised hospital experience featuring

various applications of manual arts therapeutical treatments. Prerequisite: consent of coordinator.

450-1 to 12 (1 to 4 per quarter) Advanced Skills in Technical Subjects. Modern industrial practices and techniques in various selected technical fields. For experienced persons seeking an opportunity to develop advanced techniques and to increase understanding in specialized industrial fields. Emphasis on modern industrial processes, methods, materials, and techniques used in school shops, drafting rooms, and industrial organizations. Prerequisite: basic training in area selected for study. Limited to certified teachers.

465-8 (4,4) Industrial Safety. (See Engineering Technology 465.)

480-3 Problems of Junior High School Industrial Arts. Ways and means of correlating industrial arts with other curriculum areas, selecting content, and solving problems pertinent to industrial arts at the junior high school level. Prerequisite: 12 hours in technical subjects.

485-3 Principles and Philosophy of Industrial, Vocational, and Technical Education. An understanding of the nature and purpose of practical arts, vocational and technical education, their relationships and differences, and the place of each in preparing people for the world of work. Required for Vocational coordinators and supervisors.

487-3 Layout and Planning of Technical Facilities. Principles and practices underlying the planning and designing of shops and laboratories in vocational, industrial, and technical education. Prerequisite: 12 hours in technical subjects.

491-6 (3,3) Principles of Industrial Teaching. (a) Problems and special methods in teaching industrial arts; (b) Emphasis on methods of teaching trade subjects. May be taken in either sequence. Required for vocational teachers, coordinators and supervisors. Prerequisite: one-half of concentration must be completed.

494-3 Organization and Administration of Industrial Education. Principles and policies governing the administration of industrial education programs in elementary, junior, and senior high schools; relation of federal and state supervision of industrial education to local administration. Required for vocational teachers and supervisors. Prerequisite: 12 hours in technical subjects.

495-3 Occupational Analysis. Involves the fundamental steps for analyzing trades and other occupations with some thought toward establishing appropriate units of instruction for the apprentice or student. Jobs, operations, and essential related information are analyzed. Required for vocational teachers, coordinators, and supervisors. Prerequisite: 12 hours in technical subjects.

496-3 Selection and Organization of Subject Matter. Selection and arrangement of teaching content; preparation of assignment, operation, information, and job sheets; preparation of tests. Prerequisite: 12 hours in Technical and Industrial Education.

497-3 Leaders and Literature in Technological Education. An understanding of the literature available, one's obligation for keeping abreast of new developments, and emphasis on reading and scanning for new ideas in student's specialized field. Prerequisite: 12 hours in Technical and Industrial Education.

498-3 Planning Multiple Activity Programs. Philosophy, techniques, and administration of laboratories and shops featuring multiple offerings. Prerequisite: consent of instructor.

502-6 (3,3) Measurements and Evaluations of Products and Procedures.

504-4 History of Industrial and Vocational Education.

505-4 Administration and Supervision of Industrial Education.

506-4 Cooperative Programs.

540-2 to 6 Research in Technological Education.

541-4 Occupational Information and Guidance.

550-4 College Teaching of Industrial and Technical Subjects.

560-2 to 12 (2 to 8 per quarter) New Developments in Technological Education.

570-2 to 6 Special Investigations.

580-1 to 9 Seminar.

599-1 to 9 Thesis.

Technology

100-2 Orientation. Introduction to the various phases of technology to enable the student to develop an understanding of the role of technology in industry

and in education and to help guide his thinking in relation to occupational goals.

101-9 (3,3,3) Graphic Communication. (a) Basic principles of graphic communication including orthographic (multiview) projection; sections and conventions; charts and graphs; pictorial drawing; and conceptual design. Six hours lecture-laboratory per week; (b) Principles and practice of graphic communication including auxiliary views; dimensioning and tolerancing; applications in technology; and conceptual design. Six hours lecture-laboratory per week. Prerequisite: 101a; (c) Principles of graphic communication. The graphical solution of problems involving the spatial relationships of points, lines, and planes. Six hours lecture-laboratory per week. Prerequisite: 101a.

259-3 to 60 Shop and Drafting Subjects. This is a designation for shop or drawing credit earned, or for trade proficiency, when credit is to be established by departmental evaluation. Prerequisite: junior standing.

300-9 (3,3,3) Application of Fundamental Physical Principles. A general coverage of applied science and the physical principles and systems which control man's exploitation of scientific discovery. (a,b) Quantitative applications of the principles of classical and modern physics with emphasis on the application of the laws of heat, wave motion, quantum theory, and atomic physics; (c) Introduction and analysis of the various technological and industrial systems, sub-systems, and components with special emphasis upon the design process, problem formulation, analysis, and decision phase. Prerequisite: Mathematics 111a,b, GSA 101a,b.

319-3 to 24 (3 per quarter) Industrial Internship. Industrial experience includes job skills, manufacturing processes, technical information, and labor-management relationships with supervised instruction, conferences and examinations. Prerequisite: consent of coordinator.

Theater

111-9 (3,3,3) Staging Techniques. All phases of dramatic production in connection with departmental public presentations. Lectures and laboratory.

203-4 Voice and Diction. Principles and practice in personal vocal and articulatory development and control. General group drills in phonation, resonance and vocal variety; drills for clarity and ease in articulation. For specific vocal needs: individual exercises, coaching and critical comment; leading to increased effectiveness in formal reading and speaking situations.

204-4 Acting. Basic techniques of acting in all dramatic media. Emphasis on expression through bodily action and movement.

207-4 Fundamentals of Theatrical Design. Graphic media and workshop exercises acquaint students with the problems encountered by the director, scene designer, costumer, and lighting director in providing a suitable environment, by visual means, for the actor.

208-1 to 3 Dramatic Activities. Credit to be earned by participation in public performances.

305-2 Stage Make-up. Theory and technique of various types of make-ups.

308-1 to 3 Dramatic Activities. Same as 208.

311-4 Introduction to Playwriting. The preparation of a one-act play from germinal idea to completed script. Those scripts indicating a certain level of artistry and technical control to be produced in a laboratory theater program. Course includes the analysis of dramaturgical technique and theory through the study of selected plays and criticism. Prerequisite: one course in dramatic literature and consent of instructor.

314-4 Advanced Acting. Theory and practice of acting in dramatic productions.

322-2 to 12 Practicum in Theater. Practical experience in acting, directing, and associated theater work in area tours and summer stock. Credit may be earned for the course both on tour and in stock.

GSC 354-6 (3,3) History of the Theater.

402-8 (4,4) Play Directing. (a) The principles and procedures of play direction including play selection, interpretation, and the patterning of auditory and visual stimuli; (b) Continuation of 402a emphasizing rehearsal procedures, control of tempo and mood, styles of presentation and performance, and other techniques in the direction of plays.

403-4 Aesthetics of the Drama and the Theater. Principles and practice of modern dramatic production in the light of modern aesthetic theory. A course attempting to formulate an aesthetic judgment of the theater.

404-4 Theater Management. Theater operational procedure, including both fundamental structuring and house management. The former aspect includes administration, purchasing, and accounting practices, ticket sales, publicity, promotion, and public relations. The latter aspect covers the management of box-office and ushering.

405-8 (4,4) The Scenic Imagination. (a) A study of the purely creative side of stage production. It includes an analysis of the script and its meaning for an audience; a poetic evaluation of the setting, costumes, and lighting; and the blocking out of the stage action; (b) Theater research and documentation; an approach to sketches and models; a review of the historic forms of staging, with emphasis on the modern styles from naturalism to epic theater.

406-1 American Professional Theater Procedures and Practices. An introduction to the everyday realities of a professional stage career, including problems of survival, professional ethics and protocol, personal relations, and the function of stage unions.

409-4 High School Theater and Its Production Problems.

410-3 Children's Theater. Creative dramatics; dramatization of children's literature; play production for elementary schools. Recommended for education concentrations.

411-4 Playwriting. The writing of a full-length play, a children's play, or a historical pageant-drama forms the basis of the course. Students may elect to write two one-act plays. Individual conferences supplement the class discussion and analysis of student writing. Prerequisite for graduate students: consent of instructor.

412-4 Stage Design. The design of settings for the stage and other dramatic media. Prerequisite: 207.

414-4 Costume Design.

415-4 Advanced Costume Design.

432-4 Stage Lighting. Instruments and control equipment; principals and techniques of lighting dramatic productions.

438-4 Contemporary Developments in the Theater. Critical study of theory and practice in acting, directing, production, and architecture in the modern theater. The rise and development of the film, radio, and television as dramatic media.

502-4 Advanced Directing.

503-4 Advanced Technical Problems.

504-4 The Comic Theater.

505-4 The Tragic Theater.

506-4 The American Theater.

509-4 The High School Theater and its Production Problems.

518-4 Theater Audience.

519-1 to 12 Theater Practicum.

526-3 Seminar in Theater Arts.

530-1 to 4 Research Problems in Theater.

599-1 to 9 Thesis.

University Convocation

000-0 Freshman Convocation.

Zoology

102-5 General Invertebrate Zoology. Studies of representatives of the various kinds of invertebrate animals. Relationships, structure, and natural history are emphasized. Two lecture and 6 laboratory hours per week. Prerequisite: GSA 201b.

103-5 General Vertebrate Zoology. Studies of representatives of the various kinds of vertebrate animals. Evolutionary development, structure, and natural history are emphasized. Two lecture and 6 laboratory hours per week. Prerequisite: GSA 201.

202-5 Comparative Anatomy of Vertebrates. Comparative studies of the organ

systems of vertebrate animals, with emphasis on the phylogeny and evolution of these organs. Two lecture and 6 laboratory hours per week. Prerequisite: 103.

300–5 Vertebrate Embryology. Development of the individual with the frog, chick, and pig as types. Three lectures and four laboratory hours per week. Prerequisite: 202.

303–4 General Ornithology. Classification and recognition of birds and the study of their songs, nests, migratory habits, and other behavior. Cost of field trips may be \$5 to \$10 per student. Two lecture and 4 laboratory hours per week. Prerequisite: GSA 201b.

306–4 Entomology. Principles of the structure, classification, and life histories of insects. Two lectures and 4 laboratory hours per week. Prerequisite: 102.

309–5 Elementary Cytology. Introduction to structure and function of the cell on an elementary level. Three lecture and four laboratory hours per week. Prerequisite: 15 hours of biology.

310–5 Animal Ecology. Habitats, communities, and population dynamics of animals. Cost of field trips may be \$5–\$25 per student. Three lecture and 4 laboratory hours per week. Prerequisite: 102, 103.

GSA 312–3 Conservation of Natural Resources.

GSA 313–3 Evolution.

GSA 314–3 Man's Genetic Heritage.

GSA 315–3 History of Biology.

316–4 Insect Pests and Their Control. Principal injurious insects and their allies; chemical and biological methods of control. (Credit may not be used toward a concentration in zoology.) Two lecture and 4 laboratory hours per week. Prerequisite: GSA 201b.

321–5 Histological Techniques in Zoology. Methods of preparing material for microscopic study. Two lecture and 6 laboratory hours per week. Prerequisite: one year of biological sciences or consent of instructor.

322–2 to 5 Problems in Zoology. Research on zoological problems. Prerequisite: 4.25 grade point average, senior standing, and approval of the department or faculty. (Credit may not be used toward a secondary concentration in zoology.)

382–0.5 to 1.5 (.5,.5,.5) Zoology Seminar for Seniors. Two quarters required of seniors concentrating in zoology. Prerequisite: senior standing.

400–2 Animal Taxonomy. The concepts of taxonomy and their use in zoology. Prerequisite: one year of biology or consent of instructor.

401–5 Genetics. Principles of inheritance, including genetic mechanisms, mutation, and selection. Prerequisite: 15 hours of biological science and consent of instructor.

402–4 Natural History of Invertebrates. Observation, identification, and life histories. Designed for teachers. Not for students specializing in invertebrate zoology. Prerequisite: one year of zoology including 102.

403–4 Natural History of Vertebrates. Observation, identification, and life histories. Designed for teachers. Not for students specializing in vertebrate zoology. Prerequisite: one year of zoology including 103.

404–2 to 8 Zoology Field Studies. A trip of four to eight weeks to acquaint students with animals in various environments and/or with methods of field study, collection, and preservation. Arrangements made in advance of term. Cost per individual will be approximately \$25 per week. (Only 4 hours may be used for credit.) Prerequisite: consent of department.

406–4 Protozoology. Taxonomy, cytology, reproduction, and physiology of unicellular animals. Laboratory methods of culturing and studying. Prerequisite: one year of zoology including 102 or consent of instructor.

407–5 Parasitology. Principles, collection, identification, morphology, life histories, and control measures. Prerequisite: one year of zoology including 102.

409–4 Herpetology. Taxonomic groups, identification, morphology, and natural history of amphibians and reptiles. Prerequisite: one year of zoology, including 103.

409–5 Histology of Organs. Microscopic structure of organs and tissues with emphasis on mammalian forms. Prerequisite: 202.

410–5 Vertebrate Paleontology. History of vertebrate animals in terms of their morphological change, geological succession, and ecological relationships. Prerequisite: one year of zoology including 202 or Geology 221.

412–4 Advanced Entomology. Morphology, physiology, systematics, and distribution of insects. Prerequisite: one basic course in entomology.

- 413-5 **The Invertebrates.** Structure, development, and natural history of invertebrates, except insects and parasites. Prerequisite: one year of zoology, including 102.
- 414-4 **Freshwater Invertebrates.** Taxonomic groups, identification and natural history of the regional fauna. Prerequisite: one year of zoology, including 102.
- 441-4 **Developmental Biology.** Principles of development and organization. Prerequisite: 300 and one course in cellular physiology, or consent of instructor.
- 459-4 **Game Birds.** Natural history and management. Prerequisite: one year of zoology including 103.
- 461-4 **Mammalogy.** Taxonomic groups, identification, and natural history of mammals. Prerequisite: one year of zoology including 103.
- 463-4 **Game Management.** General survey of management techniques. Prerequisite: 15 hours of biological science, consent of instructor.
- 465-4 **Ichthyology.** Taxonomic groups, identification, and natural history of fishes. Prerequisite: one year of zoology, including 103.
- 466-4 **Fish Management.** Sampling, dynamics, and manipulation of fish populations, age and growth of fishes, and habitat improvement. Prerequisites: 15 hours of biological science, consent of instructor.
- 501-4 **Animal Biology For High School Teachers of Biology.**
- 502-2 **Recent Developments in Biological Sciences.**
- 507-8 **BSCS-High School Biology.**
- 508-4 **Helminthology.**
- 510-4 **Bio-ecology.**
- 511-4 **Limnology.**
- 512-3 **Animal Geography.**
- 513-3 **Advanced Ornithology.**
- 520-5 **Advanced Invertebrates.**
- 521-4 **Advanced Limnology.**
- 525-5 **Cytology.**
- 540-3 **Factors in Animal Reproduction.**
- 542-3 **Osteology.**
- 560-3 **Advanced Wildlife Management.**
- 561-4 **Game Mammals.**
- 566-4 **Fish Culture.**
- 577-3 **Population Ecology.**
- 578-4 **Population Genetics.**
- 579-4 **Animal Behavior.**
- 580-4 **Advanced Systematics.**
- 581-3 **Readings in Current Zoological Literature.**
- 582-1.5 (0.5,0.5,0.5) **Graduate Zoology Seminar.**
- 583-3 (1,1,1) **Teaching of Zoology in College.**
- 584-3 (1,1,1) **Protozoology Seminar.**
- 596-3 to 12 **Special Research.**
- 599-2 to 9 **Research and Thesis.**
- 600-3 to 48 **Research and Dissertation.**

9 / Faculty

College of Liberal Arts and Sciences

Anthropology

Professors Philip J. C. Dark, Ph.D.; J. Charles Kelley, Ph.D.; Charles H. Lange, Ph.D. (*Chairman*); Robert L. Rands, Ph.D.; Walter W. Taylor, Ph.D.; Carroll L. Riley, Ph.D.

Assistant Professors Milton Altschuler, Ph.D.; D. Lee Guemple, Ph.D.; Jerome S. Handler, Ph.D.; Bruce B. MacLachlan, Ph.D.; Joel M. Maring, Ph.D.; Jon D. Muller, Ph.D.; Roy Wagner, Ph.D.

Adjunct Professor Adrianus A. Gerbrands, Ph.D.

Botany

Professors William D. Gray, Ph.D.; Robert H. Mohlenbrock, Ph.D. (*Chairman*); Ladislao V. Olah, Ph.D.; Jacob Verduin, Ph.D.; John W. Voigt, Ph.D.; Walter B. Welch, Ph.D.

Associate Professors William C. Ashby, Ph.D.; Margaret Kaeiser, Ph.D.; Aristotel J. Pappelis, Ph.D.; Walter E. Schmid, Ph.D.

Assistant Professors William M. Marberry, M.S.; Lawrence Matten, Ph.D.; Donald R. Tindall, Ph.D.; Donald Ugent, Ph.D.

Chemistry

Professors Talbert W. Abbott, Ph.D. (*Emeritus*); Roger E. Beyler, Ph.D.; George E. Brown, Ph.D.; Elbert H. Hadley, Ph.D.; Robert W. MacVicar, Ph.D.; James W. Neckers, Ph.D.; Robert A. Scott, Ph.D. (*Emeritus*); Robert E. Van Atta, Ph.D.; Kenneth A. Van Lente, Ph.D.; John H. Wotiz, Ph.D. (*Chairman*).

Associate Professors James N. BeMiller, Ph.D.; Albert L. Caskey, Ph.D.; Herbert I. Hadler, Ph.D.; J. Herbert Hall, Ph.D.; Cal Y. Meyers, Ph.D.; Wilbur N. Moulton, Ph.D.; Boris Musulin, Ph.D.; Charles Schmulbach, Ph.D.; Gerard V. Smith, Ph.D.; Russell F. Trimble, Ph.D.

Assistant Professors Paul M. Anderson, Ph.D.; Bruce Coxon, Ph.D.; H. Frank Gibband, Ph.D.; Conrad C. Hinckley, Ph.D.; David Koster, Ph.D.; Donald W. Slocum, Ph.D.; James Tyrrell, Ph.D.

English

Research Professor Harry T. Moore, Ph.D.

Professors James W. Benziger, Ph.D.; E. C. Coleman, Ph.D.; Hugh Duncan, Ph.D.; William Evans, D.Ed.; Robert D. Faner, Ph.D.; Joseph H. Friend, Ph.D.; Jesse Harris, Ph.D.; Sidney Moss, Ph.D.; Henry Dan Piper, Ph.D.; William Simeone, Ph.D.; E. Earle Stibitz, Ph.D.; Charles D. Tenney, Ph.D.; David Vieth, Ph.D.; Howard Webb, Ph.D.; Georgia Winn, Ph.D.

Associate Professors Frances M. Barbour, M.A. (*Emerita*); Ted E. Boyle, Ph.D.; Edmund Epstein, M.A.; John Gardner, Ph.D.; Mark Hillegas, Ph.D.; Edith Krappe, Ph.D. (*Emerita*); Paul Morrill, Ph.D.; Charles Parish, Ph.D.; Robert Partlow, Ph.D.; Daniel Cook, Ph.D.

Assistant Professors Julia M. Barber, A.M. (*Emerita*); William J. Brown, Ph.D.; Winifred Burns, M.A.; George Camp, Ph.D.; Thomas Cassidy, M.A.; Elizabeth A. Cox, A.M. (*Emerita*); Thomas W. Davis, M.A.; Herbert Donow, Ph.D.; Aristotle Katranides, Ph.D.; George Goodin, Ph.D.; Robert Griffin, Ph.D.; Robert Harrell, Ph.D.; Thomas Hatton, Ph.D.; John Howell, Ph.D.; Paul Hurley, Ph.D.; Howard Keller, M.A.; Richard Lawson, Ph.D.; John Joseph Leonard, M.A.; Fred Lingle, M.A.; Raymond Rainbow, Ph.D.; Byron

Raizis, Ph.D.; Hans Rudnick, Ph.D.; Barry Sanders, Ph.D.; Bernice Warren, Ph.D.; Muriel West, Ph.D.
Instructors Leon Bennett, M.A.; Terence Brown, M.A.; Diana Dodd, M.A.; Edward McNichols, M.A.; Betty L. Mitchell, M.A.; Edna Travis, M.S.; Roy Weshinsky, M.A.

Foreign Languages

Professors Albert W. Bork, Doctor en Letras; J. Cary Davis, Ph.D.; Hellmut A. Hartwig, Ph.D. (*Chairman*); Vera L. Peacock, Ph.D.
Associate Professors Howard French, Ph.D.; David L. Gobert, Ph.D.; James A. Kilker, Ph.D.; Joseph R. Kupcek, Ph.D.; Helmut Liedloff, Ph.D.; Madeleine M. Smith, Ph.D.; Hensley Woodbridge, Ph.D.
Assistant Professors Vincent Cosentino, Ph.D.; Anna K. Neufeld, M.A.
Lecturer Arnold Ulner, M.A.

Visiting Professor D. Lincoln Canfield, Ph.D.

Geography

Professors Douglas B. Carter, Ph.D.; David E. Christensen, Ph.D.; Floyd F. Cunningham, Ph.D. (*Emeritus*); T. J. Denis Fair, Ph.D.; Campbell W. Pennington, Ph.D.
Associate Professors David L. Jones, Ph.D.; Annemarie E. Krause, Ph.D.; Theodore H. Schmulde, Ph.D.; Marjorie Shank, M.A. (*Emerita*); Frank H. Thomas, Ph.D. (*Chairman*).
Assistant Professors Daniel R. Irwin, M.A.; Frank Kirk, M.A.; John Rooney, Ph.D.

Visiting Professor Jean Gottmann, Lic. es Litt.

Geology

Professors Stanley E. Harris, Jr., Ph.D.
Associate Professors Jen Ho Fang, Ph.D.; Daniel N. Miller, Ph.D. (*Chairman*)
Assistant Professors Frank James Bell, M.S.; George D. Fraunfelder, Ph.D.; John D. Utgaard, Ph.D.
Instructor Don L. Sawatzky, B.S.

Government

Professors Abdul Abbass, Ph.D.; Orville Alexander, Ph.D. (*Chairman*); Ikua Chou, Ph.D.; Fred Giuld, Ph.D.; Jack Isakoff, Ph.D.; Ward Morton, Ph.D.; Frank Klingberg, Ph.D.; Robert McGrath, Ph.D.; Ward Morton, Ph.D.; Randall Nelson, Ph.D.; John Rendleman, J.D.; Max Turner, Ph.D.
Associate Professors William Garner, Ph.D.; Charles Goodsell, Ph.D.; Earl Hanson, Ph.D.; William Hardenbergh, Ph.D.; Melvin Kahn, Ph.D.; David Kenney, Ph.D.; Marian Ridgeway, Ph.D.; Max Sappenfield, Ph.D.
Assistant Professors John Baker, Ph.D.; Richard Dale, Ph.D.; Robert H. Dreher, LL.B.; Egon Kamarasy, Ph.D.; Manfred Landecker, Ph.D.; Norman Luttbeg, Ph.D.; Stephen Wasby, Ph.D.; Alfred Junz, M.A.
Instructor Rino Bianchi, M.A.

Visiting Professor Willard Beaulac

History

Research Professor C. Harvey Gardiner, Ph.D.
Professors George W. Adams, Ph.D. (*Chairman*); Harry Ammon, Ph.D.; Harold E. Briggs, Ph.D. (*Emeritus*); Ping-chia Kuo, Ph.D.
Associate Professors Howard W. Allen, Ph.D.; George L. Cherry, Ph.D.; Betty Fladeland, Ph.D.; William A. Pitkin, Ph.D.; Meyer Reinhold, Ph.D.; Lonnie R. Shelby, Ph.D.; John Y. Simon, Ph.D.; John I. Wright, M.A. (*Emeritus*).
Assistant Professors Montgomery G. Carrott, Ph.D.; David E. Conrad, Ph.D.; Robert L. Gold, Ph.D.; Thadd E. Hall, Ph.D.; Eugene Trani, Ph.D.

Mathematics

Professors Nicolas Artemiadis, D. Sc.; Amos H. Black, Ph.D.; Lauwerens Kuipers, Ph.D.; Carl E. Langenhop, Ph.D.; Abraham M. Mark, Ph.D.; Charles Maxwell, Ph.D.; Wilbur C. McDaniel, Ph.D.; John M. H. Olmsted, Ph.D. (*Chairman*)

Associate Professors Zamir Bavel, Ph.D.; Ward D. Bovwsma, Ph.D.; Theodore A. Burton, Ph.D.; Neal E. Foland, Ph.D.; Elbert Fulkerson, M.A. (*Emeritus*); Leslie Dean Gates, Jr., Ph.D.; Dilla Hall, Ph.D. (*Emeritus*); Robert W. Hunt, Ph.D.; Bernard J. Marks, Ph.D.; Thomas A. Martinsek, Ph.D.; Robert A. Moore, Ph.D.; Ernest Shult, Ph.D.; Michael Skalsky, D.N.Sc.; Herbert H. Snyder, Ph.D.; Thomas H. Starks, Ph.D.; Joseph C. Wilson, Ph.D.

Assistant Professors Ramendra K. Bhattacharya, Ph.D.; Charles F. Koch, Ph.D.; Thomas B. Paine, Ph.D.; Donald Paige, Ed.D.; Franklin D. Pedersen, Ph.D.; Michael Poole, Ph.D.; Norman F. Robinson, Ph.D.; Carl Townsend, Ph.D.; Alice K. Wright, M.A. (*Emerita*).

Instructors Imogene C. Beckemeyer, M.A.; John Samuel Brown, M.S.; George Elston, M.S.; James L. Slechticky, M.S.; Larry L. Wimp, M.A.

Microbiology

Professors Carl C. Lindegren, Ph.D. (*Emeritus*); Maurice Ogur, Ph.D. (*Chairman*); Isaac L. Shechmeister, Ph.D.

Associate Professor Dan O. McClary, Ph.D.; Hassan Rouhandeh, Ph.D.

Philosophy

Research Professor Lewis Hahn, Ph.D.

Professors Wayne Leys, Ph.D.; William J. McKeefery, Ph.D.; Willis Moore, Ph.D. (*Chairman*); George Plochmann, Ph.D.; Henry N. Wieman, Ph.D. (*Emeritus*); Charles D. Tenney, Ph.D.

Associate Professors James Diefenbeck, Ph.D.; Elizabeth Eames, Ph.D.; Morris Eames, Ph.D.; George McClure, Ph.D.

Assistant Professors David Clarke, Ph.D.; Don Ihde, Ph.D.; Matthew Kelly, Ph.D.; Shu-Hsien Liu, Ph.D.; John Howie, Ph.D.

Physics and Astronomy

Professors Martin J. Arvin, Ph.D.; Charles J. Brasefield, Ph.D. (*Emeritus*); John O'Dwyer, Ph.D.; Richard Watson, Ph.D.; Otis Young, Ph.D.; John R. Zimmerman, Ph.D. (*Chairman*)

Associate Professors Walter Henneberger, Ph.D.; William Nickell, Ph.D.; Robert N. Zitter, Ph.D.

Assistant Professors G. P. Alldredge, Ph.D.; Charles M. Bowden, Ph.D.; William Klein, Ph.D.; Richard Linster, Ph.D.; Mykola Saporaschenko, Ph.D.; Charlotte Zimmerschied, M.A. (*Emerita*).

Instructor Robert Etherton, M.A.

Physiology

Professors Jay A. Bender, Ph.D.; George H. Gass, Ph.D.; Harold M. Kaplan, Ph.D. (*Chairman*); Alfred Richardson, Ph.D.

Associate Professors Tom T. Dunagan, Ph.D.; Florence M. Foote, Ph.D.; Richard V. Lee, M.D.; Joseph P. Miranti, M.D.

Assistant Professor Donald M. Miller, Ph.D.

Adjunct Professor Eli L. Borkon, M.D.

Psychology

Research Professor Noble Kelley, Ph.D.

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Air Force ROTC

Professor Colonel Edward C. Murphy

Assistant Professors Major William A. Schenck; Captain Edward A. Corich;

Captain Robert W. Propst; Captain Joe E. Johnson; Captain James E. Cox.

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